PHYSICAL CONSTANTS OF HYDROCARBONS

Volume III
MONONUCLEAR AROMATIC HYDROCARBONS

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Dedicated to

JOSEPH G. ALTHER

GENERAL INTRODUCTION

American Chemical Society Series of Chemical Monographs

By arrangement with the Interallied Conference of Pure and Applied Chemistry, which met in London and Brussels in July, 1919, the American Chemical Society was to undertake the production and publication of Scientific and Technologic monographs on chemical subjects. At the same time it was agreed that the National Research Council, in cooperation with the American Chemical Society and the American Physical Society, should undertake the production and publication of Critical Tables of Chemical and Physical Constants. The American Chemical Society and the National Research Council mutually agreed to care for these two fields of chemical development. The American Chemical Society named as Trustees, to make the necessary arrangements for the publication of the monographs, Charles L. Parsons, secretary of the Society, Washington, D. C.; the late John E. Teeple, then treasurer of the Society, New York; and Professor Gellert Alleman of Swarthmore College. The Trustees arranged for the publication of the A.C.S. series of (a) Scientific and (b) Technologic Monographs by the Chemical Catalog Company, Inc. (Reinhold Publishing Corporation, successors) of New York.

The Council of the American Chemical Society, acting through its Committee on National Policy, appointed editors (the present list of whom appears at the close of this introduction) to select authors of competent authority in their respective fields and to consider critically the manuscripts submitted.

The first monograph of the series appeared in 1921. After twenty-three years of experience certain modifications of general policy are indicated. In the beginning there still remained from the preceding five decades a distinct though arbitrary differentiation between so-called "pure science" publications and technologic or applied science literature. This differentiation is fast becoming nebulous. Research in private enterprise has grown apace and not a little of it is pursued on the frontiers of knowledge. Furthermore, most workers in the sciences are coming to see the artificiality of the separation. The methods of both groups of workers are the same. They employ the same instrumentalities, and now frankly recognize that their objectives are common, namely the search for new knowledge for the service of man. The officers of the

Society therefore have combined the two editorial Boards in a single Board of twelve representative members.

Also in the beginning of the series, it seemed expedient to construe rather broadly the definition of a monograph. Needs of workers had to be recognized. Consequently among the first one hundred monographs appeared works in the form of treatises covering in some instances rather broad areas. Because such necessary works do not now want for publishers, it is considered advisable to hew more strictly to the line of the monograph character which means more complete and critical treatment of relatively restricted areas, and where a broader field needs coverage, to subdivide it into logical sub-areas. The prodigious expansion of new knowledge makes such a change desirable.

These monographs are intended to serve two principal purposes: first, to make available to chemists a thorough treatment of a selected area in form usable by persons working in more or less unrelated fields to the end that they may correlate their own work with a larger area of physical science discipline; second, to stimulate further research in the specific field treated. To implement this purpose the authors of monographs are expected to give extended references to the literature. Where the literature is of such volume that a complete bibliography is impracticable, the authors are expected to append a list of references critically selected on the basis of their relative importance and significance.

Preface

The abundance of mononuclear aromatic hydrocarbons found in the world's resources, such as coal tar and petroleum, calls for a complete study of their physical constants. The present study is a collation of all melting point, boiling point, density, and refractive index data available before May, 1944. War-time restrictions have prevented the incorporation of some valuable data determined under the auspices of the American Petroleum Institute at the National Bureau of Standards.

We are indeed grateful to the staff of John Crerar Library for valuable guidance in the location of material and for privileges granted in connection with use of the outstanding facilities of this institution.

Deep appreciation is hereby expressed for the assistance of the Universal Oil Products Company and the author's colleagues, Mary Alexander, Prudence Van Arsdell, Nancy Corbin, Madge Spiegler, and M. S. Beyt in this collation and critical study of the physical constants of aromatic hydrocarbons.

GUSTAV EGLOFF

Chicago, Ill.,
May 1, 1945

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Volume III

I. INTRODUCTION

Foreword

The present volume of Physical Constants of Hydrocarbons, the third of the series, is a collation and evaluation of physical constants of mononuclear aromatic hydrocarbons. This classification excludes hydrocarbons having a fused ring structure, any ring of which is aromatic. *Biphenyl* and *bicycloheptylbenzene* appear in this volume, but polynuclear aromatics such as *indane* and *tetralin* will appear in Volume IV. The constants of aliphatic and alicyclic hydrocarbons were published in Volumes I and II respectively.

The values tabulated in this volume were collected from the literature and unpublished data from Universal Oil Products Company and other research laboratories. The method used for searching is given here to indicate the degree of completeness of the study. References on hydrocarbons were located by a check of the subject and formula indexes of *Chemical Abstracts* from its beginning through 1943 and the subject and formula indexes of *Chemisches Zentralblatt* from 1900 through 1939. The check on these journals was brought up to date through a page by page perusal of *Chemical Abstracts* from January to May 1944 and the issues of *Chemisches Zentralblatt* that have been available since 1940. Beilstein's "Handbuch der Organische Chemie," Volumes V and Supplement V, were covered to find references published before 1900 and to insure thorough coverage of the later literature. The Landolt-Börnstein "Tabellen," which contain references on physical chemistry, were also checked because of the specific nature of the contents. Other secondary sources were covered in part, but sufficient additional material was not found to warrant complete coverage. Some references came to our attention while studying the current chemical literature. The original publications of the references thus located were then covered with the exception of a few which were unavailable or printed in languages other than English, French, German, Italian, Russian, and Spanish. From the bibliographies of the original publications covered, many additional references were found. The research involved a total of about 20,000 references of which approximately 5,500 contained data suitable for this volume and Volume IV.

The constants recorded were melting points at all given pressures, boiling points at all pressures, densities at all temperatures, refractive indices of the sodium D, hydrogen α, β, and γ, and helium lines at all temperatures, angles of rotation at the sodium D lines at all temperatures, critical temperatures, critical pressures, critical densities, and sublimation points. Melting ranges over two degrees were not recorded except in unusual cases. Pentarylethanes, for example, decompose on melting in

air and consequently give wide melting point ranges. These ranges were recorded as well as wide ranges for compounds on which no other data were available. Boiling point ranges over five degrees were omitted and smaller ranges were eliminated when considerable data were available for a compound.

All figures were recorded as given when the original was read, but during the final editing all units of temperature were converted to degrees centigrade. For the conversion of Absolute or Kelvin temperatures, 273°, 273.2°, or 273.16° was subtracted, according to the number of significant figures of the original reading. All units of pressure were converted to millimeters of mercury except melting point pressures, which were converted to atmospheres. Values from obviously careless determinations were not recorded. At the time they were abstracted, all values were given a rating on a scale on which one unit represented the poorest work and five the best. In cases where considerable data were available, the poorer values were eliminated from the tabulation. For example, benzene values were abstracted from over one thousand references but it was thought worthwhile to record the constants from only the best four hundred of these. Despite our efforts to make the search complete and accurate we have probably omitted some data and erred in some of the tabulations. We should appreciate having any omissions or errors called to our attention.

History of Benzene

Benzene, the parent mononuclear aromatic hydrocarbon, was discovered by Michael Faraday in 1825.[1] Although liquids of which benzene was doubtless the principal constituent were described in earlier records, Faraday was the first to isolate benzene and determine its physical and chemical properties.[2] The source from which he obtained it was the oil-gas used for illuminating purposes. He named the compound "bicarburet of hydrogen," but Mitscherlich, who prepared the same compound by the distillation of benzoic acid with lime, chose to call it "benzin".[3] This name, with variations in spelling, has been used since that time. Mitscherlich identified his compound with that of Faraday on the basis of corresponding physical and chemical properties, and in addition determined its empirical formula.

Table 1.

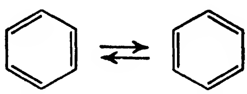
	Faraday (1825)	Mitscherlich (1833)	Calculated Values[4] (1945)
M. P.	5.6°	7°	5.49°
B. P.	85.6°	86°	80.07°
D (liquid)	0.85 @15.5°	0.85	0.88343 @15.5°
D (solid)	0.956		1.00643 @ 5.5°

1. Faraday, M., Phil. Trans. 1825, 440.
2. Lunge, G., "Coal-Tar and Ammonia," 4th ed., Gurney and Jackson, London, 1909, p. 1148.
3. Mitscherlich, E., Ann. Physik 29, 231 1833.
4. These values were calculated from the equations derived for the present volume of "Physical Constants of Hydrocarbons."

In 1845, Hofmann reported the presence of benzene in coal tar,[5] but prior discovery was claimed by Leigh, who contended that his report of 1842 had not received proper publication.[6,7] This discovery was highly important in that it revealed a source of benzene and other aromatics sufficiently large to meet the commercial demands soon created by Perkin's discovery of mauve in 1856. Another potentially large commercial source was first made known by De La Rue and Müller's discovery of benzene in "Burmese naphtha" or "Rangoon tar" which is known today as petroleum.[8] Coal gas, a source of benzene widely used in the early days of the aromatic industry, was suggested as a source by Faraday, but Berthelot's publications in 1876 were the first to report experimental evidence of the presence of benzene in coal gas.[9]

Although the problem of the structure of benzene and its derivatives has confronted chemists since the compound was known, some features of aromatic behavior have been clarified only since the concept of resonance was set forth. The classical conception of double bonds involves a type of reactivity consistent with their use in aliphatic and alicyclic structures but inconsistent with aromatic behavior. Kekulé's proposal proved for a long time to be the most adequate conception of the structure of benzene and has laid the groundwork for the present theoretical concept.[10] The original formula, a conjugated cyclohexatriene, immediately raised objections, for only one *ortho* disubstitution product was known, whereas two were possible from Kekulé's structure.

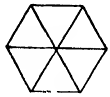
Furthermore, the high degree of unsaturation would result in greater reactivity than was observed with benzene. Kekulé then modified his original theory by proposing a system of oscillating double bonds as represented by the following diagram.[11]



Although this theory has been modified in the light of resonance, the above forms are accepted as two resonance structures.

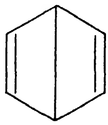
5. Hofmann, A. W., Ann. **55,** 200 1845.
6. Leigh, Brit. Assoc. Advancement Sci., Rept. **12,** sec. 2, 39 1842.
7. Lunge, G., "Coal-Tar and Ammonia," 4th ed., Gurney and Jackson, London, 1909, p. 177.
8. De La Rue, W., and H. Müller, Proc. Roy. Soc. **8,** 221 1856.
9. Berthelot, Compt. rend. **82,** 871 1876.
10. Kekulé, A., Bull. soc. chim. [2] **3,** 98 1863.
11. Kekulé, A., Ann. **162,** 77 1872.

Other structures, proposed by Kekulé's contemporaries, sufficiently plausible to receive some consideration were those of Claus, Dewar, Ladenberg, Armstrong, Baeyer, and Thiele. Claus's formula in which all carbon atoms have one *para* bond is ruled out because such a structure represents a compound with considerable tendency to react.



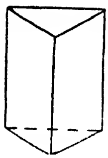
(Claus 1867)

For the same reason, Dewar's formula is highly improbable.[12]



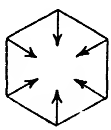
(Dewar 1866)

This symbol has been used, however, to represent one of the less stable resonance structures.[13] Ladenburg's prismatic formula[14] is not possible, since it has been established that the benzene ring lies in one plane.



(Ladenburg 1869)

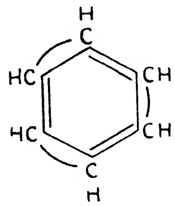
The Armstrong-Baeyer centric formula[15] is meaningless unless the bonds pointing toward the center are interpreted as free valences. Such a condition would result in a compound having a greater tendency to react than is exhibited by benzene.



(Armstrong-Baeyer 1887)

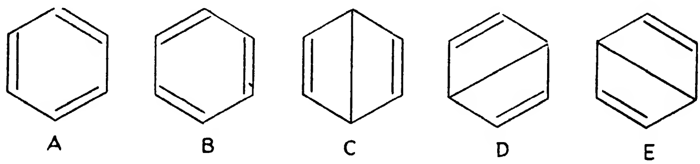
Thiele's partial valence theory[16] is also vague in that the curved lines have no significance in our concept of valences.

12. Dewar, Proc. Roy. Soc. Edinburgh 1866-7, 82.
13. Pauling, L., and G. W. Wheland, J. Chem. Phys. **3**, 362 1933.
14. Ladenburg, A., Ber. **2**, 140 1869.
15. Armstrong, H. E., J. Chem. Soc. **51**, 258 1887; A. Baeyer, Ann. **245**, 103 1888, *ibid.* **251**, 257 1899.
16. Thiele, J., Ann. **506**, 87 1899.



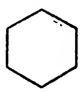
(Thiele 1899)

The concept of the benzene molecule set forth by the theory of resonance is a structure which may be represented essentially by the following symbols:[17]



Resonance among these structures imparts to benzene its characteristics which are peculiar to aromatic compounds. The resonance energy resulting from the resonance between these structures causes the molecule to be more stable than if it existed in any one of the resonance structures alone. The molecule does not behave as if its structure shifted from one of these symbols to another. Its behavior coincides with one permanent structure functioning as a composite of the various resonance structures. The Kekulé structures, A and B, are far more important than the others, for the resonance energy between them is about 80 per cent of the total. The excited structures C, D, and E, which are much less stable than A and B, contribute about 20 per cent of the resonance energy. For a detailed discussion of this subject, the reader is referred to Wheland.[18]

The inadequacy of any single formula for benzene has prompted many chemists to adopt the symbol



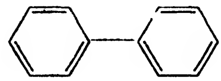
In the tables of this book we have arbitrarily used the structure

for benzene to avoid confusion with six-carbon alicyclic structures.

17. Pauling, L., and G. W. Wheland, J. Chem. Phys. 1, 362 1933.
18. Wheland, G. W., "Theory of Resonance," John Wiley and Sons, Inc., New York, 1944.

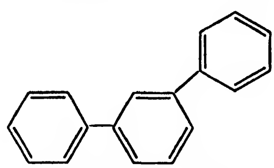
Organization of Compounds

The organization of this volume will be reviewed to facilitate the location of information and to explain the significance of data given in the tables. The titles and corresponding initial pages of all general classifications and sections are found in the Table of Contents. The general classifications are arranged in order with increasing number of benzene rings, *i.e.*, all compounds containing only one benzene ring, are tabulated before *biphenyl*,

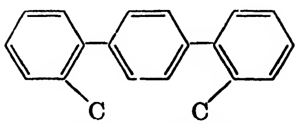


all compounds with two benzene rings before *terphenyl*, etc.

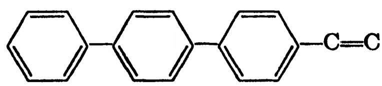
Compounds of more than ten phenyl groups are listed under the general classification, Higher Phenyl Compounds. These general classifications are further limited by the general nature of substituents, *i.e.*, benzene with aliphatic substituents precedes benzene with alicyclic substituents. Classifications of compounds having two or more benzene rings are so made that compounds with phenyl-phenyl linkages are listed separately and precede compounds with two or more phenyl substitutions on aliphatics or alicyclics. For example, classifications including (A), (B), and (C)



1,3-Diphenylbenzene
(A)

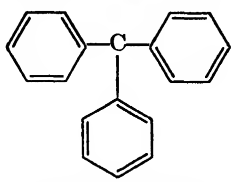


1,4-Di-*o*-tolylbenzene
(B)

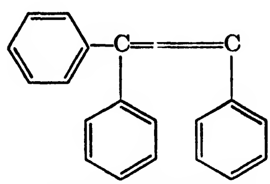


1-Phenyl-4-(4′-ethenylphenyl)-benzene
(C)

precede those including (D) and (E).

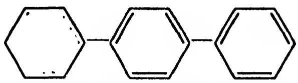


Triphenylmethane
(D)

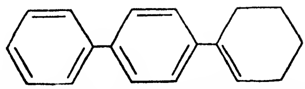


1,1,2-Triphenylethene
(E)

Classifications including compounds such as (F) and (G)

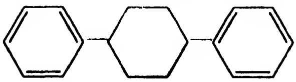


1-Cyclohexyl-4-phenylbenzene
(F)

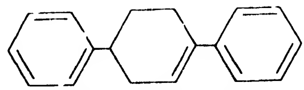


1-(Cyclohexen-1'-yl)-4-phenylbenzene
(G)

precede those including (H) and (I).



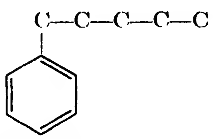
1,4-Diphenylcyclohexane
(H)



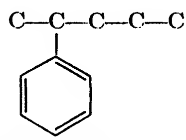
1,4-Diphenylcyclohexene-1
(I)

The sections numbered with arabic numerals under a given classification are listed in order of decreasing hydrogen content of the compounds. If the hydrogen content of the compounds in two or more sections is equal, the sections for aliphatic substituents are listed primarily in order of increasing number of unsaturated linkages, *i.e.*, Alkynylbenzenes (C_nH_{2n-10}), Alkadienylbenzenes (C_nH_{2n-10}), Dialkenylbenzenes (C_nH_{2n-10}); the sections for alicyclic compounds are listed primarily in order of increasing number of alicyclic substituents, secondly in order of increasing complexity within the substituent, *i.e.*, Cyclenylbenzenes (C_nH_{2n-10}), Bicyclylbenzenes (C_nH_{2n-10}), Dicyclylbenzenes (C_nH_{2n-10}).

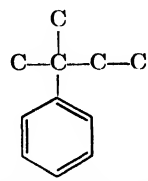
Within each section, the compounds are tabulated primarily in order of increasing carbon content. The order used for compounds having a given carbon content was assigned in accordance with increasing number and complexity of substituents, *e.g.*:



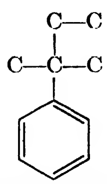
(1) *n*-Pentylbenzene



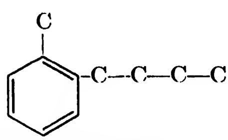
(2) 2-Phenylpentane



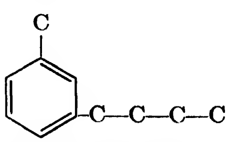
(3) 2-Phenyl-2-methylbutane



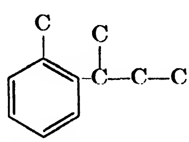
(4) 2-Phenyl-2-ethylpropane



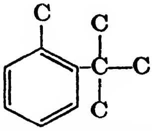
(5) 1-Methyl-2-*n*-butylbenzene



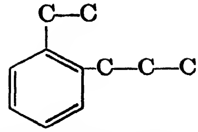
(6) 1-Methyl-3-*n*-butylbenzene



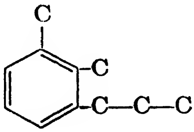
(7) 1-Methyl-2-*sec*-butylbenzene



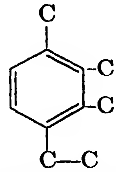
(8) 1-Methyl-2-*tert*-butylbenzene



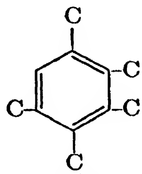
(9) 1-Ethyl-2-*n*-propylbenzene



(10) 1,2-Dimethyl-3-*n*-propylbenzene

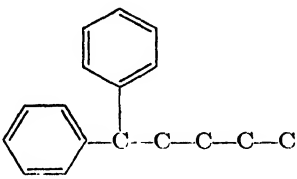


(11) 1,2,3-Trimethyl-4-ethylbenzen

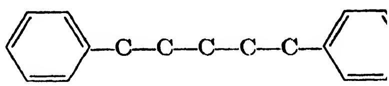


(12) Pentamethylbenzene

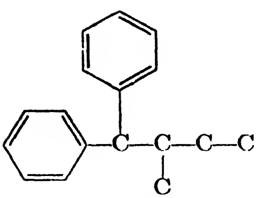
The compounds having two phenyl groups substituted on aliphatics fol in the order:



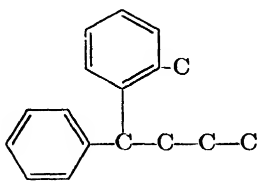
(1) 1,1-Diphenylpentane



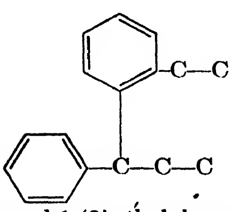
(2) 1,5-Diphenylpentane



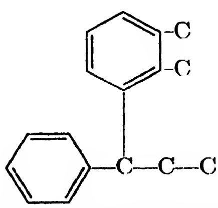
(3) 1,1-Diphenyl-2-methylbutane



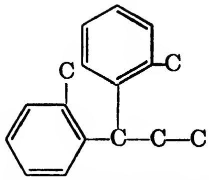
(4) 1-Phenyl-1-*o*-tolylbutane



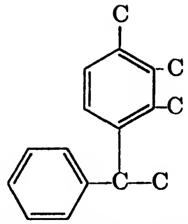
(5) 1-Phenyl-1-(2′-ethylphenyl)-propane



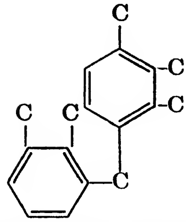
(6) 1-Phenyl-1-(2′,3′-dimethylpheny propane



(7) 1,1-Di-*o*-tolylpropane



(8) 1-Phenyl-1-(2′,3′,4′-trimethylphenyl)-ethane



(9) 2,3-Dimethylphenyl-(2′,3′,4′-trimethylphenyl)-methane

The page number of each group of references is listed in the table of contents. References are found at the end of each section except for those having a large number of references. In these cases, the references will be found immediately following the constants of a single compound or the compounds of a given carbon content. The references include the author's name and initials as stated in the original publication, the standard abbreviation for the periodical, the volume number, first page of the article, and year of publication. References to secondary sources also are given for those articles not read in original form. All Russian names have been transliterated in accordance with *Chemical Abstracts'* practice to standardize spelling and to avoid the duplication of references. For example, the Russian name transliterated to Wolnow in the German literature is recorded in this study as Volnov.

Nomenclature

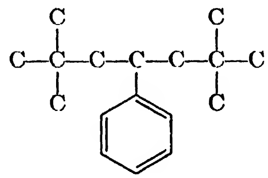
In the absence of a system of nomenclature covering all types of mononuclear aromatics, the compounds in this book have been assigned scientific names compounded from the Geneva rules[19] and Proposed International Rules[20] for numbering ring systems. The deviations which were made in the interests of simplifying some of the nomenclature will be explained. Each compound has primarily been given a name which should not be ambiguous. Secondly, an attempt was made to regard the benzene ring as nuclear, but this practice was not followed when it involved the use of unnecessarily complicated nomenclature. The names used are strictly in accordance with scientific practice except for compounds which have a

19. Patterson, A. M., J. Am. Chem. Soc. **55**, 3905 1933.
20. Patterson, A. M., and L. T. Capell, "The Ring Index," Reinhold Publishing Corp., New York, **1940**.

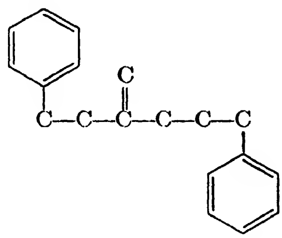
classic trivial name that has been used almost exclusively in the literature. Compounds with a trivial name well known to workers in a specific field but not to chemists in general are given the scientific names with common names and alternative scientific names in parentheses beneath the preferred name. An example of this type is Isopropylbenzene (Cumene).

Illustrations of preferred and alternative scientific nomenclature follow. The name 1,4-Di-*n*-propylbenzene is used in preference to 1-(4′-*n*-Propylphenyl)-propane, but 1-Phenyl-2-methylbutane is preferred to (2′-Methylbutyl)-benzene. Other examples include the use of 1-Phenyl-2,4-dimethylcyclohexane rather than (2′,4′-Dimethylcyclohexyl)-benzene and the use of 4,4′-Diethylbiphenyl in preference to 1-Ethyl-4-(4′-ethylphenyl)-benzene.

When names were assigned with reference to aliphatic muclei, the longest straight chain was named as the nuclear hydrocarbon. For example, the compound below is named 2,2,6,6-Tetramethyl-4-phenylheptane rather than 1,3-Di-*tert*-butyl-2-phenylpropane.

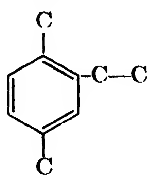


This practice was also followed for compounds having unsaturated substituents, *i.e.*, 1,6-Diphenyl-3-methylenehexane was used in preference to 2-Phenethyl-5-phenylpentene-1.



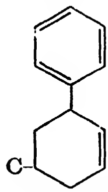
Except for bicyclyl and tricyclyl derivatives, such as 2-Phenylbicyclo-[2,2,0]-hexane and 3-Phenyltricyclo-[2,2,1,$0^{2,6}$]-heptane, numbers were assigned to substituents according to the following specifications:

(1) The sum of numbers assigned to the substituents and unsaturated linkages was the lowest possible numerical value.



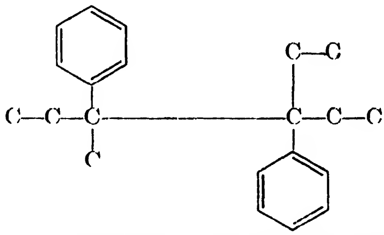
1,4-Dimethyl-2-ethylbenzene, *not* 1,4-Dimethyl-3-ethylbenzene.

(2) After the condition under (1) was satisfied, the lowest number was given first to double bonds, and second to triple bonds.

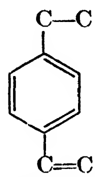


1-Phenyl-5-methylcyclohexene-2, *not* 1-Methyl-3-phenylcyclohexene-4.

(3) After fulfilling the conditions under (1) and (2), the lowest number was assigned primarily to the group having the least carbon atoms (for alicyclic groups, the ring having the fewest carbon atoms), and secondly to the most saturated substituent. This order follows: methyl, ethyl, ethynyl, propyl, isopropyl, etc., hexyl, methylcyclopentyl, cyclohexyl, cyclohexenyl, cyclohexadienyl, phenyl, etc.

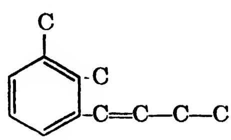


3-Methyl-3,4-diphenyl-4-ethylhexane, *not* 3-Ethyl-3,4-diphenyl-4-methylhexane



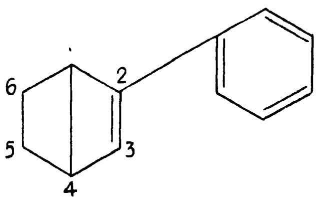
1-Ethyl-4-ethenylbenzene, *not* 1-Ethenyl-4-ethylbenzene

The position of the benzene ring relative to its substituent was assumed to be the 1-position of the substituent unless otherwise specified. This practice was observed to simplify the nomenclature so that a compound could be named 1,2-Dimethyl-3-(buten-1′-yl)-benzene rather than 1,2-Dimethyl-3-[1′-(buten-1′-yl)]-benzene.



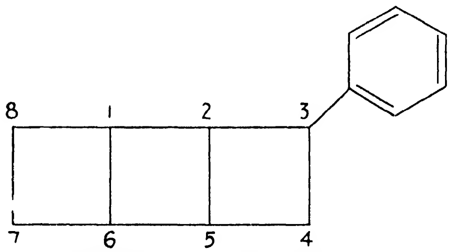
The Proposed International Rules for numbering ring systems were followed in the nomenclature of bicyclo and tricyclo derivatives. A

thorough discussion of these rules is found in the Introduction to Volume II of the "Physical Constants of Hydrocarbons." The previously discussed methods of assigning substituent numbers were adhered to only after the conditions set forth in the International Rules were satisfied. The alicyclic structure was named as the parent hydrocarbon unless a simpler and less ambiguous name resulted from considering the alicyclic as a substituent. Examples of the nomenclature used for these classes of compounds follow:



2-Phenylbicyclo-[2,2,0]-hexene-2

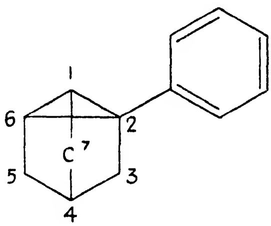
The double bond and phenyl groups cannot be assigned the lowest number when the system for numbering bicyclic compounds is followed.



3-Phenyltricyclo-[4,2,0,$0^{2,5}$]-octane

not

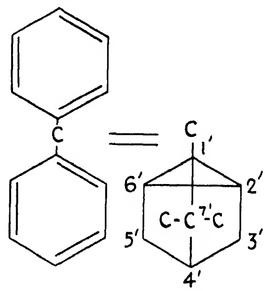
2-Phenyltricyclo-[2,4,$0^{5,8}$,0]-octane



2-Phenyltricyclo-[2,2,1,$0^{2,6}$]-heptane

not

1-Phenyltricyclo-[$3^{1,5}$,1,1]-heptane



1,1-Diphenyl-2-(7′,7′-dimethyltricyclo-[2,2,1,$0^{2,6}$]-heptanyl)-ethene

The prefixes *sec* and *iso*, which are commonly used in the literature to differentiate between aliphatic isomers, were not used in this volume unless their use markedly simplifies the nomenclature. Secondary (*sec*) was used only to refer to 2-Phenylaliphatics.

```
C—C—C—C          C—C—C—C—C
 |                |
```

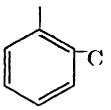
sec-Butyl   *sec*-Pentyl

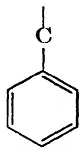
Iso was used only in connection with propyl and butyl radicals.

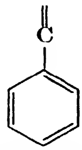
```
                   C
                   |
  C—C—C          C—C—C
   |             |
```

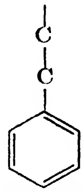
Isopropyl   Isobutyl

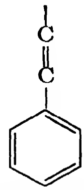
Radicals containing, for example, both an alicyclic and an alkyl group or both a phenyl and an alkenyl group were named as complex radicals. Complex names used were *o*-, *m*-, and *p*-tolyl, benzyl, benzylidene, phenethyl, phenethenyl, phenethylidene, phenethynyl, *o*-, *m*-, and *p*-biphenylyl, benzhydryl, and benzhydrylidene.

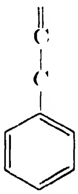

o-Tolyl

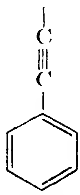

Benzyl

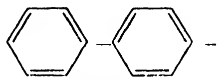

Benzylidene

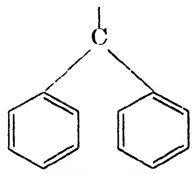

Phenethyl

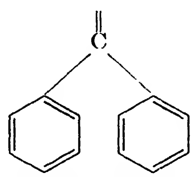

Phenethenyl


Phenethylidene

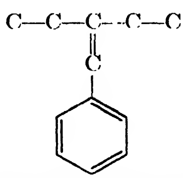

Phenethynyl

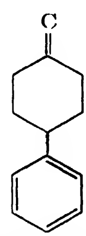

p-Biphenylyl


Benzhydryl

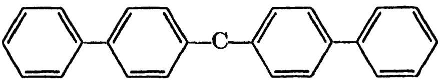

Benzhydrylidene

A group linked to a second group by a double bond was sometimes named as the substituent of the second group; the suffix, -ylidene, was used for these substituents except in the case of a one carbon group which is called methylene.

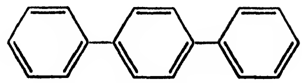

3-Benzylidenepentane


1-Methylene-4-phenylcyclohexane

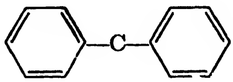
The Greek (di, tri, tetra, etc.) prefixes were used to denote the number of substituents of a given kind and the Latin (bi, ter, quatra, etc.) to indicate the number of units of a given kind in a radical or nucleus.



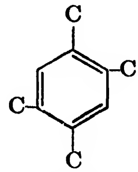
Di-*p*-biphenylylmethane



p-Terphenyl



Diphenylmethane



1,2,4,5-Tetramethylbenzene

Critical Evaluation of the Data and Calculation of the Most Probable Values

Precision and Accuracy of the Data

Critical evaluation of the experimental data on physical constants is limited by the failure of many investigators to report the extent to which their compounds were purified, the precision of apparatus used and other bases for comparison of data. Each value was given an accuracy rating from 1 to 5 (5 signifies the best) based on the reliability of the experimenter and information given in the article such as carbon and hydrogen analyses, methods of purification, description of apparatus, and date of the investigation. Another important factor in evaluating a constant is the purpose for which it was determined. Data determined for the purpose of finding the actual numerical value of the constant are in general the best available. Constants from experiments in physical chemistry, which necessitate meticulous work, usually are superior to values given when the object of the experiment is the preparation of a compound. A constant reported as a criterion of purity or for identification of a by-product of the main reaction is seldom very accurate.

A precision rating based on the probable error of the determination was also assigned. When the probable error was not given, the usual custom of arbitrarily assuming it to be ± 2 in the last figure was followed. The precision ratings are inversely proportional to the squares of the probable errors. The total weight of the value for the physical constant is the product of the accuracy rating and the precision rating, as shown in the following example:

Exp. Value	Probable Error	$(\text{Error})^2$	Precision Rating	Accuracy Rating	Total Weight
140.1	± 0.2	0.04	1	2	2
140.10	± 0.02	0.0004	100	3	300

The reliability of the data varies considerably from compound to compound. In some cases only one or two determinations of a physical

constant appear in the literature, while in other cases a large amount of data is available. Where very few experimental values are available no "most probable value" has been given, because it is often difficult to tell from the literature which value is most reliable. If several values of a constant have been reported, all or nearly all of which have been determined under the same conditions, the "most probable value" (shown in boldface type at the top of the appropriate column) represents a weighted average. Where the data cover a considerable range of experimental conditions, the constants of an equation relating the physical constant to temperature or pressure have been evaluated by the method of least squares. The "most probable value" at standard conditions is found from this equation, and therefore based on all of the data rather than only on the values determined at standard conditions. Equations calculated in this manner are given under the heading of "Additional Data."

When the constants of an equation were evaluated, the standard deviation (τ) of the experimental values was determined from the formula

$$\tau = \sqrt{\frac{\Sigma v^2}{n}}$$

where v is the difference between the observed values and the calculated values, and n is the number of observations. The Pierce-Chauvenet Criterion[21] was then applied to determine which experimental values were beyond the limits of error. The values lying outside of these limits were discarded and are not published in this volume. Experimental values which were seen graphically to differ widely from the majority of the values were discarded before calculation of the equations. Beyond the range of the equations no experimental values were deleted unless it was obvious from a graph that they were grossly in error.

Method of Calculation

The method of least squares was used to evaluate the constants of the various equations. A theoretical discussion of this method will not be given here, but may be found in a number of mathematical and statistical books. Some of the books treating this subject are:

Scarborough, J. B., "Numerical Mathematical Analysis," The Johns Hopkins Press, Baltimore, 1930.
Whittaker, E. T., and G. Robinson, "The Calculus of Observations," D. Van Nostrand Company, New York, 2nd ed., 1937.
Mills, F. C., "Statistical Methods," Henry Holt and Company, New York, 1939.
Crumpler, T. B., and J. H. Yoe, "Chemical Computations and Errors," John Wiley and Sons, New York, 1940.
Deming, W. E., "Statistical Adjustment of Data," John Wiley and Sons, New York, 1943.
Worthing, A. G., and J. Geffner, "Treatment of Experimental Data," John Wiley and Sons, New York, 1943.

21. Crumpler, T. B., and J. H. Yoe, "Chemical Computations and Errors," John Wiley and Sons, Inc., New York, 1940, p. 190.

Least squares equations may be set up and solved in several different ways. The method used in this work will be given.

The variation of specific gravity with temperature is expressed by the equation

$$D_4^t = D_4^{t_0} + a(t - t_0) + b(t - t_0)^2.$$

Taking $t_0 = 20°$ C, and writing $(t - t_0)$ as Θ and $D_4^{t_0}$ (in this case D_4^{20}) as k the equation may be written

$$(1) \quad D_4^t = k + a\Theta + b\Theta^2.$$

Because three constants, k, a, and b, are to be evaluated, three simultaneous equations are necessary. The first of these consists simply of the sums of the experimental values for specific gravity, temperature difference, the square of the temperature difference, and the number of observations, n.

$$(1a) \quad kn + a\Sigma\Theta + b\Sigma\Theta^2 = \Sigma D$$

The other two equations are obtained by multiplying equation (1) first by Θ, the coefficient of the second unknown, and then by Θ^2, the coefficient of the third unknown and summing the experimental values of the quantities so obtained. The resulting equations are:

$$(2) \quad k\Sigma\Theta + a\Sigma\Theta^2 + b\Sigma\Theta^3 = \Sigma D\Theta$$

$$(3) \quad k\Sigma\Theta^2 + a\Sigma\Theta^3 + b\Sigma\Theta^4 = \Sigma D\Theta^2$$

Equations (1a), (2), and (3) are called "normal equations."

If the experimental values have different weights, n is replaced by ΣW, the sum of the weights. ΣD is then replaced by ΣWD, the sum of the weighted densities, $\Sigma\Theta$ by $\Sigma W\Theta$, the sum of the weighted temperatures, etc.

The quantities to be calculated in order to evaluate k, a, and b, are seen from the normal equations to be ΣW, $\Sigma W\Theta$, $\Sigma W\Theta^2$, $\Sigma W\Theta^3$, $\Sigma W\Theta^4$, ΣWD, $\Sigma WD\Theta$, and $\Sigma WD\Theta^2$.

Several methods for solving the simultaneous equations have been suggested. The one used in this study is relatively simple when a calculating machine is available. For this type of solution the quantities in the normal equations are lined up as follows:

	$A(k)$		$B(a)$		$C(b)$		D	E
(1)	ΣW	(+)	$\Sigma W\Theta$	(+)	$\Sigma W\Theta^2$	(=)	ΣWD	$\Sigma W + \Sigma W\Theta + \Sigma W\Theta^2 + \Sigma WD$
(2)	$\Sigma W\Theta$	(+)	$\Sigma W\Theta^2$	(+)	$\Sigma W\Theta^3$	(=)	$\Sigma WD\Theta$	$\Sigma W\Theta + \Sigma W\Theta^2 + \Sigma W\Theta^3 + \Sigma WD\Theta$
(3)	$\Sigma W\Theta^2$	(+)	$\Sigma W\Theta^3$	(+)	$\Sigma W\Theta^4$	(=)	$\Sigma WD\Theta^2$	$\Sigma W\Theta^2 + \Sigma W\Theta^3 + \Sigma W\Theta^4 + \Sigma WD\Theta^2$

The values in line (1) are then divided by ΣW, those in line (2) by $\Sigma W\Theta$, and those in line (3) by $\Sigma W\Theta^2$.

	$A(k)$	$B(a)$	$C(b)$	D	E
(4)	1	$(+)\dfrac{\Sigma W\theta}{\Sigma W}$	$(+)\dfrac{\Sigma W\theta^2}{\Sigma W}$	$(=)\dfrac{\Sigma WD}{\Sigma W}$	$\dfrac{\Sigma W+\Sigma W\theta+\Sigma W\theta^2+\Sigma WD}{\Sigma W}$
(5)	1	$(+)\dfrac{\Sigma W\theta^2}{\Sigma W\theta}$	$(+)\dfrac{\Sigma W\theta^3}{\Sigma W\theta}$	$(=)\dfrac{\Sigma WD\theta}{\Sigma W\theta}$	$\dfrac{\Sigma W\theta+\Sigma W\theta^2+\Sigma W\theta^3+\Sigma WD\theta}{\Sigma W\theta}$
(6)	1	$(+)\dfrac{\Sigma W\theta^3}{\Sigma W\theta^2}$	$(+)\dfrac{\Sigma W\theta^4}{\Sigma W\theta^2}$	$(=)\dfrac{\Sigma WD\theta^2}{\Sigma W\theta^2}$	$\dfrac{\Sigma W\theta^2+\Sigma W\theta^3+\Sigma W\theta^4+\Sigma WD\theta^2}{\Sigma W\theta^2}$

All members of column A are now one, so that by subtracting line (4) from line (5) and line (6) from line (5) (or any other convenient combination) two simultaneous equations in two unknowns are obtained.

	$B(a)$	$C(b)$	D	E
(7) 5 − 4)	$\dfrac{\Sigma W\theta^2}{\Sigma W\theta}-\dfrac{\Sigma W\theta}{\Sigma W}$	$(+)\dfrac{\Sigma W\theta^3}{\Sigma W\theta}-\dfrac{\Sigma W\theta^2}{\Sigma W}$	$(=)\dfrac{\Sigma WD\theta}{\Sigma W\theta}-\dfrac{\Sigma WD}{\Sigma W}$	$\dfrac{\Sigma W\theta+\Sigma W\theta^2+\Sigma W\theta^3+\Sigma WD\theta}{\Sigma W\theta}-\dfrac{\Sigma W+\Sigma W\theta+\Sigma W\theta^2+\Sigma WD}{\Sigma W}$
(8) (5 − 6)	$\dfrac{\Sigma W\theta^3}{\Sigma W\theta^2}-\dfrac{\Sigma W\theta^2}{\Sigma W\theta}$	$(+)\dfrac{\Sigma W\theta^4}{\Sigma W\theta^2}-\dfrac{\Sigma W\theta^3}{\Sigma W\theta}$	$(=)\dfrac{\Sigma WD\theta^2}{\Sigma W\theta^2}-\dfrac{\Sigma WD\theta}{\Sigma W\theta}$	$\dfrac{\Sigma W\theta^2+\Sigma W\theta^3+\Sigma W\theta^4+\Sigma WD\theta^2}{\Sigma W\theta^2}-\dfrac{\Sigma W\theta+\Sigma W\theta^2+\Sigma W\theta^3+\Sigma WD\theta}{\Sigma W\theta}$

Equations (7) and (8) are divided by the members of the first remaining column (B), and one of the resulting equations is subtracted from the other. Thus an equation with only one unknown is obtained, and may be readily solved. The resulting value of b is substituted in the two equations in two unknowns ((7) and (8)) to obtain the second constant, a. Substitution of the two known constants in the three original equations will lead to the value of the third constant, k. In case a straightline equation with only the constants k and a is sufficient, line 3 and column C are omitted.

The last column, E, serves as a check. If no error in calculation is made, the value obtained by dividing E by A will agree with the sum of the values $\dfrac{B}{A}+\dfrac{C}{A}+\dfrac{D}{A}$, and similarly through the rest of the operations.

A set of experimental specific gravity values and the calculation of the constants of an equation representing the data follows. In this example purely mathematical considerations would indicate the use of a straight-line equation instead of a quadratic. The t^2 term was included because the variation of density with temperature should show an appreciable curvature over the one hundred degree range included in the data.

1,1-Diphenylhexadecane

Temp. (t)	$t-20$ (Θ)	Specific Gravity	Weight
20	0	0.9117	4
20	0	0.9135	6
100	80	0.8615	3
50	30	0.8940	3
0	−20	0.9265	3

Θ	Θ^2	Θ^3	Θ^4	D	$D\Theta$	$D\Theta^2$	W
0	0	0	0	0.9117	0	0	4
0	0	0	0	0.9135	0	0	6
80	6,400	512,000	40,960,000	0.8615	68.92	5513.6	3
30	900	27,000	810,000	0.8940	26.82	804.6	3
−20	400	−9,000	160,000	0.9265	−18.53	370.6	3

The weighed sums are:

$$\Sigma W = 19 \qquad \Sigma W\Theta^4 = 125{,}790{,}000$$
$$\Sigma W\Theta = 270 \qquad \Sigma WD = 17.1738$$
$$\Sigma W\Theta^2 = 23{,}100 \qquad \Sigma WD\Theta = 231.63$$
$$\Sigma W\Theta^3 = 1{,}593{,}000 \qquad \Sigma WD\Theta^2 = 20{,}066.4$$

The calculations are carried out as follows:

	$A(k)$	$B(a)$	$C(b)$	D	E
	19	270	23,100	17.1738	23,406.1739
	270	23,100	1,593,000	231.63	1,616,601.63
	23.100	1,593,000	125,790,000	20,066.4	127,426,166.4
(1)	1	14.21052631	1215.789473	0.903884210	1,231.903884
(2)	1	85.5555555	5900.00	0.857888888	5,987.41344
(3)	1	68.9610389	5445.45454	0.868675324	5,516.28425
(3 − 1)		54.75051259	4229.665067	−0.035208886	4,284.380366
(2 − 3)		16.5945166	454.54546	−0.010786436	471.12919
(4)		1	77.2534331	−0.000643078655	78.2527900
(5)		1	27.39130466	−0.000650000012	28.39065465

(4 − 5) $\quad 49.862128844b = 0.000006921357$

$$b = 0.0_61388098987$$

$$54.75051259a + 4229.665067(0.0_61388098987) = -0.035208886$$
$$a = -0.000653802196$$

$$16.5945166a + 454.54546(0.0_61388098987) = -0.010786436$$
$$a = -0.000653802196$$

$$19k - 270(0.000653802196) + 23{,}100(0.0_61388098987) = 17.1738$$
$$k = 0.913006315$$

$$270k - 23{,}100(0.000653802196) + 1{,}593{,}000(0.0_61388098987) = 231.63$$
$$k = 0.913007407$$

$$23{,}100k - 1{,}593{,}000(0.000653802196) + 125{,}790{,}000(0.0_61388098987) = 20{,}066.4$$
$$k = 0.913006493$$

$$D_4^t = 0.913006 - 0.000653802196(t-20) + 0.0_61388098987(t-20)^2$$

The equation as it stands is carried out to more decimal places than are warranted by the accuracy of the data, and may be rounded off to $D_4 = 0.9130 - 0.0006538\ (t-20) + 0.0_61388\ (t-20)^2$. All the decimal places

are kept until the final step has been reached, as rounding off during the calculation may introduce a considerable error.

After the value for constant b has been determined, it is substituted in *both* equations in two unknowns to find constant a. Similarly, a and b are substituted in all three original equations in order to determine k. These multiple substitutions serve as a check on the accuracy of the work. If the constants differ appreciably, an error has probably been made in the calculations.

The constants of equations for melting point, boiling point, and refractive index are determined in a similar manner. The normal equations needed for the calculations are given below.

Melting point:

$$\Sigma tW = k\Sigma W + a\Sigma Wp - b\Sigma Wp^2$$
$$\Sigma tWp = k\Sigma Wp + a\Sigma Wp^2 - b\Sigma Wp^3$$
$$\Sigma tWp^2 = k\Sigma Wp^2 + a\Sigma Wp^3 - b\Sigma Wp^4$$

Boiling point:

$$\Sigma W\frac{1}{T} = k\Sigma W + a\Sigma W \log p$$
$$\Sigma W\frac{1}{T} \log p = k\Sigma W \log p + a\Sigma W(\log p)^2$$

Specific gravity:

$$\Sigma WD = k\Sigma W + a\Sigma Wt + b\Sigma Wt^2$$
$$\Sigma WDt = k\Sigma Wt + a\Sigma Wt^2 + b\Sigma Wt^3$$
$$\Sigma WDt^2 = k\Sigma Wt^2 + a\Sigma Wt^3 + b\Sigma Wt^4$$

Refractive index:

$$\Sigma Wn = k\Sigma W + a\Sigma Wt + b\Sigma Wt^2$$
$$\Sigma Wnt = k\Sigma Wt + a\Sigma Wt^2 + b\Sigma Wt^3$$
$$\Sigma Wnt^2 = k\Sigma Wt^2 + a\Sigma Wt^3 + b\Sigma Wt^4$$

Melting Points

The melting points at atmospheric pressure are listed in order of decreasing temperature. Melting points at other pressures follow in order of decreasing pressure. In some cases the pressures were experimentally determined as kilograms per square centimeter but these values were converted to atmospheres for the purpose of uniformity. One kilogram per square centimeter is equivalent to 0.9678 atmosphere.

Some values have been recorded as freezing points. The freezing point of a substance is coincident with the melting point when defined as the temperature at which the liquid and solid phases are in equilibrium. However, the apparent, or experimentally determined, melting point and freezing point sometimes differ. The process of melting seems to occur with an independent finite speed even above the melting point, so that while it always starts at the same temperature, the temperature of the partly melted portion may rise during the process if heat is supplied at a greater rate than it is absorbed for the transition of solid to liquid.[22] Conversely, liquids may be supercooled to varying degrees before crystalliza-

22. Taylor, H. S., "Treatise on Physical Chemistry," D. Van Nostrand Company, New York, 2nd ed. 1931, pp. 272-273.

tion sets in. The observed temperature at which the liquid and solid are apparently in equilibrium differs from the true freezing point if supercooling has occurred. Even when the freezing point has been determined by extrapolation of a time-temperature curve, this value is significantly in error if the amount of supercooling is large compared to the refrigerating head of temperature.[23] When an author has definitely stated that his value is a freezing point rather than a melting point, this fact has been indicated in a footnote.

Some compounds crystallize in two or more crystalline forms which have different melting points. When the literature indicates that a melting point was determined on a specific form, this information is given in a footnote.

Whenever warranted by the amount of data, a weighted average is given in boldface type. In a few cases melting points at high pressures have been reported. The variation of melting point with pressure may be expressed by the equation

$$t = k + ap - bp^2 \quad [24]$$

where t = melting point and p = pressure. Where high-pressure data are given, the constants of this equation have been evaluated. In these cases the boldface value represents the melting point at one atmosphere.

Boiling Points

For each hydrocarbon the boiling points at 760 mm of mercury are listed first in order of decreasing temperature. The boiling points at other pressures follow in order of decreasing pressure. If the pressure was given in units other than millimeters of mercury, it was converted before being recorded. The pressure in millimeters corresponding to each boiling point is given, unless this pressure is 760 mm, in which case it is omitted.

The variation of boiling point with pressure may be expressed by the integrated form of the Clausius-Clapeyron equation

$$\frac{1}{T} = k + a \log p$$

where T = boiling point in °K and p = pressure in mm of mercury. Where sufficient data at different pressures are given, the constants of this equation have been evaluated. The equation is not valid over a wide range, because the assumptions made in the integration are not strictly true. The differential form of the equation is

$$\frac{dp}{dt} = \frac{\Delta H}{T\Delta V} = \frac{\Delta H}{T(V_g - V_l)}$$

23. Mair, B. J., A. R. Glasgow, Jr., and F. D. Rossini, J. Research Natl. Bur. Standards **26**, 591 **1941.**
24. Tamman, Ann. Physik [N. F.] **66, 471 1898.**

where

p = vapor pressure of liquid
t = temperature
T = absolute temperature
ΔH = heat of vaporization
ΔV = change in volume on vaporization
V_g = molecular volume of gaseous phase
V_l = molecular volume of liquid phase

In integrating this equation the assumptions are made that (1) the volume of the liquid, V_l, is negligible in comparison with the volume of vapor, V_g; (2) the heat of vaporization, ΔH, is constant; and (3) the vapor is a perfect gas. These assumptions are only approximately valid, and introduce some errors. The heat of vaporization, ΔH, changes with the temperature so that over a wide range considerable error is caused by assuming it to be constant. The integrated form of the Clausius-Clapeyron equation fits the data well from about 200 to 800 mm of mercury. At higher pressures it is valid over a longer range, at lower pressures over a shorter range.

When boiling points have been determined over a wide range of pressure, separate sets of constants for the equation have been evaluated for different pressure ranges. In this case the boldface value is the boiling point at 760 mm of mercury calculated from the equation valid at 760 mm. When the only available boiling point data were determined at or near 760 mm, the boldface value is the weighted average.

Specific Gravity

Specific gravities determined at 20°C with reference to water at 4°C are listed first, in order of increasing numerical value. Following these are the specific gravities determined at other temperatures, in order of decreasing temperature. Values referred to water at a temperature differing from 4°C follow values at the same temperature referred to water at 4°C, and in order of decreasing temperature of the water, *i.e.*, $D\,25°$, D^{25}_{25}, D^{25}_{0}. A specific gravity determined with reference to water at 4°C is listed as $D\,t$. If the determination was made at temperature t_2 with reference to water at a temperature other than 4°C, t_1, the specific gravity is listed as $D^{t_2}_{t_1}$. This value may be converted to the $D^{t_2}_{4}$ value by means of the formula

$$D^{t_2}_{4} \text{ (hydrocarbon)} = D^{t_2}_{t_1} \text{ (hydrocarbon)} \times D^{t_1}_{4} \text{ (water)}.$$

The variation of specific gravity with temperature is expressed by the equation

$$D^{t}_{4} = D^{t_0}_{4} + a(t - t_0) + b(t - t_0)^2$$

in which t_0 is usually taken as 20°C. Over a 30 to 40 degree range the density is very nearly a linear function of the temperature, and the t^2 term may be disregarded. When the data permitted, the constants of the equation were evaluated. The differential form, or temperature coefficient

of specific gravity, is given under the heading of additional data. This equation is in the form

$$\frac{dD}{dt} = a + 2b(t - t_0) = a\left[1 + \frac{2b}{a}(t - t_0)\right]$$

For shorter ranges this reduces to

$$\frac{dD}{dt} = a.$$

The value of dD/dt at a given temperature is added to the most probable value at 20°C, since t is taken as 20°C.

Lipkin and Kurtz[25] have determined the relationship between the values of constants a and b and the molecular weight of the compound. With very few exceptions the values for these constants determined in this work agree very well with the values postulated by them.

In the case of some compounds with high melting points, most of the specific gravity determinations fell in a temperature range considerably above 20°C. When this was true, t_0 was taken as 50° or 100°C. The boldface value then has the temperature indicated. Boldface values with no indication of temperature are at 20°C.

Refractive Index

Refractive indices are given for the Na_D, H_α, H_β, H_γ, and He lines whenever these values have been reported in the literature. Lines reported as C, F, and G, were assumed to be H_α, H_β, and H_γ respectively. The wave lengths of the above-mentioned lines are given below:

Line	Wave Length (Å)
He_r	6678
H_α	6563
Na_D	5893
He_y	5876
He_g	5016
H_β	4861
H_γ	4341

In most cases the literature does not specify whether a refractive index for a He line is for the red, yellow, or green line. These values have been recorded simply as n^t_{He} values. Na_D line values at 20°C are listed first, followed by values at other temperatures in order of decreasing temperature. The latter are recorded in the form $n\,t°$. Values for lines other than Na_D are listed in the order H_α, H_β, H_γ, and He. Within each group they are listed in order of decreasing temperature. A superscript indicates the temperature, a subscript the line, as $n^{20}_{H\alpha}$. References to refractive indices at lines other than the ones recorded are given in footnotes.

25. Lipkin, M. R., and S. S. Kurtz, Jr., Ind. Eng. Chem. Anal. Ed. **13**, 291 **1941.**

The refractive index varies with the temperature in a manner analogous to specific gravity, though the temperature coefficient is smaller. The equation is of the same type as that used for specific gravity.

When the data permitted, the temperature coefficient of the Na_D line refractive indices was determined. In almost all cases the temperature range was small enough so that a straight line equation represented the data with sufficient accuracy. The boldface value represents the refractive index for the Na_D line at 20°C.

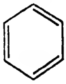
Additional Data

The additional data column contains values for critical temperature, critical pressure, critical density, angle of rotation for the Na_D line, and sublimation temperatures when these are available. It also contains equations for calculating melting points, boiling points, specific gravities, and refractive indices at other than standard conditions. The range over which the equation is valid is indicated in parentheses.

II. BENZENE AND ITS ALIPHATIC DERIVATIVES

1. Benzene C_nH_{2n-6}
2. Benzene with Alkyl Substitutions C_nH_{2n-6}
3. Benzene with One Alkenyl Substitution C_nH_{2n-8}
4. Benzene with One Alkynyl Substitution C_nH_{2n-10}
5. Benzene with One Alkadienyl Substitution C_nH_{2n-10}
6. Benzene with Two Alkenyl Substitutions C_nH_{2n-10}
7. Benzene with One Alkenynyl Substitution C_nH_{2n-12}
8. Benzene with One Alkatrienyl Substitution C_nH_{2n-12}
9. Benzene with One Alkadiynyl Substitution C_nH_{2n-14}
10. Benzene with One Alkatetraenyl Substitution C_nH_{2n-14}
11. Benzene with Two Alkynyl Substitutions C_nH_{2n-14}
12. Benzene with One Alkatriynyl Substitution C_nH_{2n-18}

1. BENZENE, C_nH_{2n-6}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Benzene 				
5.49	**80.07**	**0.87866**	**1.50096**	Crit. Temp. (°C)
5.91[313]	80.67[201]	0.8775[127,206,247]	1 4993[236]	290.8[131]
5.70[231]	80.60 – 80.67[2]	0.8776[268]	1.4995[110]	290.5[4]
5.61[206]	80.5(d)	0.87771[315]	1.49985(h)[352]	289.9[96]
5.6[15,253,405]	80.35 – 80.5[398]	0.87777[119]	1.50015[127]	288.5[24,117,184,229,354,368,402,404,405]
5.58[94,223,340,404]	80.49[340]	0.8779[269]	1.5003[125]	
5.56[240,241]	80.46[146]	0.87806[129]	1.500307[268]	
5.55[197]	80.35 – 80.45[389]	0.8782[401]	1.5004[242]	288.4[140,243,246,364,372,378]
5.54[113]	80.4(e)	0.8784[89,110]	1.5008[147]	
5.52(a)[271]	80.36[52,218]	0.8784(g)[347]	1.5009[174]	288.1[293]
5.51[152,169]	80.35[23]	0.878434[282]	1.50092[370]	288.0[295]
5.51 ± 0.02[26]	80.3(f)	0.87847[176]	1.5010[291]	287.7[130]
5.51 ± 0.01[396,397]	80.2 – 80.3[34,172,173]	0.8786[102]	1.50103[185]	283.4[122]
5.50 ± 0.01[28]	80.1 – 80.3[350]	0.87862[360]	1.5011[193,336]	
5.50[77,89,197,227,350,410]	80.28 ± 0.01[363]	0.87865[40]	1.50111[178]	Crit Pressure (mm Hg)
5.5(b)	80.26[382]	0.878675(g)[185]	1.50114[183A]	
5.5(c)[72]	80.25[238,361,365]	0.8787[248,325,328]	1.5012[159]	
5.5 ± 0.2[171]	80.15 – 80.25[390]	0.8788[250,299,301,304,305,358]	1.50122[127]	38,076.0[4]
5.4974(a)[300]	80.23 – 80.24[309,310]		1.50132[306]	38,053.2[4]
5.493 ± 0.007[58]	80.15 – 80.24[392]	0.8789[164,239,365]	1.50135[337,338]	36,404.0[184]
5.493 ± 0.007(a)[300]	80.23 ± 0.002[149]	0.87895[350,411]	1.50137[53,169]	36,396.40[368,372]
5.493 ± 0.007(c)[331]	80.20 – 80.21[28]	0.87896[127]	1.50138[191]	
5.49 ± 0.01[28]	80.16 – 80.21[391]	0.8790[39,41,91,141,163,270,277,373,408]	1.5014[54,89,232,382]	36,395[402,404,405]
5.49[211,232,343]	80.20[28]		1.50148[329,407,408]	
5.49(c)[65]	80.20 ± 0.02[349]	0.87901[103]	1.50149[179]	
5.485(a)[98]	80.20 ± 0.05[306]	0.87902[45]	1.50153[241]	Crit. Density
5.484[298]	80.15 – 80.20[70,200]	0.879063(g)[100]	1.50154[101]	
5.483[235,303]	80.2(j)	0.879085(g)[69]	1.50165[170]	0.3037[405]
5.483(a)[302]	80.18[148]	0.8791[8,303]	1.50209[6]	0.3043[295]
5.480[172]	80.15 – 80.18[302]	0.87940[2]	1.50222[369]	0.3045[111,373,404]
5.48[69,78,79,97,166,297]	80.173(k)[341]	0.8794[66]	1.00177(m)[160]	
5.48(c)[145]	80.17[403]	0.8796[193]	1.46178(h) 79.96°[276]	0.305[122]
5.48 ± 0.02[28,177]	80.15 – 80.17[114]	0.8799[53,54,329]	1.465195(h) 75.09°[276]	
5.47 ± 0.01[177]	80.15[80,123]	0.8802[14]	1.467427 70.0°[268]	
5.47 ± 0.02[69]	80.10 – 80.15[392,394]	0.88029[83]	1.470952 65.0°[268]	
5.46[215]	80.05 – 80.15[231]	0.88041[170]	1.471975(h) 65.00°[276]	
5.42 – 5.46[114]	80.14[356]	0.88048(g)[407]	1.474218 60.0°[268]	
5.458[216]	80.12 – 80.13[118]	0.8807[382]	1.4744 60°[291]	
5.449 – 5.455[182]	80.03 – 80.13[287]	0.4514 280°[213,295,373]	1.477637 55.0°[268]	
5.45[87,110,174,202,290]	80.122[411]		1.480905 50.0°[268]	
5.45 ± 0.05[61]	80.12[89,334]	0.4708 275°[295]	1.4811 50°[291]	
5.44 – 5.445[30,233,353]	80.08 – 80.12[12,160]	0.4984 270°[373]	1.48520(h) 45.03°[276]	
5.44(a)[234]	80.110[342]	0.4985 270°[295]	1.4851 45°[112]	
5.432[145]	80.10[105]		1.485545 43.0°[268]	

The notes designated by letters appear on pages 37 and 38.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
Benzene	80.1(l)	0.5327	260° [213, 295]	1.485641	42.6° [268]	*
(Continued)	80.0 – 80.1 [383]			1.48842(h)	40.07° [276]	
	80.094 [127,335]	0.5328	260° [373]	1.487573	40.0° [268]	
5.43 [42,181,239,251,254,345,384]	80.094 ± 0.002 [396]	0.5609	250° [373]	1.4877	40° [291]	
5.42 [190,257,264]	80.093 ± 0.002 [397]	0.5610	250° [295]	1.49168(h)	35.06° [276]	†
5.41 [279]	80.09 [190]	0.5851	240° [373]	1.490732	35.0° [268]	
5.40 [128]	80.05 – 80.08 [314]	0.5852	240° [213, 295]	1.4918	35° [112]	
5.4(i)	80.05 – 80.07 [128]			1.493408	31.0° [268]	
5.4(c) [158,383]	80.05 [56,76]	0.6065	230° [373]	1.49497(h)	30.05° [276]	
5.4 ± 0.2 [171]	79.99 – 80.05 [133]	0.6066	230° [295]	1.4943	30° [291]	‡
5.35 [5,143,345]	80.04 [104]	0.6255	220° [373]	1.494815(h)	30° [118]	
5.345 [74]	80.00 ± 0.08 [61]	0.6256	220° [213, 295]	1.49486	30° [56]	
5.340 [74]	80.0(o)			1.494888(h)	30° [76]	
5.32 [135,344]	80(p) [193,294,369]	0.6432	210° [295, 373]	1.49534	30° [81]	§
5.3 [204,221,366]	79.6 [93,196,311]			1.4960	28.6° [115]	
5.25 [154]	118(q) [16]	0.6605	200° [373]	1.497705(h)	25.2° [309,310]	
5.1 [136]	106(r) [16]	0.6610	200° [213, 295]	1.496991	25.0° [268]	
5.075 [29]	94(s) [18]			1.4970	25° [108]	
6.0(n) [17]	87(t) [17]	0.6758	190° [295, 373]	1.49765	25° [392]	¶
atm	82.02(v) [217]			1.49774	25° [46]	
204.2 11,000 [49]	81.35(u) [217]	0.6906	180° [213, 295,373]	1.49779	25° [375]	
190.5 10,000 [49]	81.28(v) [217]			1.4979	25° [69]	
176.7 9,000 [49]	288.0 36,226 [402]	0.7043	170° [295, 373]	1.49794(h)	25° [151]	⊙
162.2 8,000 [49]	286.7 35,436 [402]			1.49795	25° [21,22]	
147.2 7,000 [49]	284.3 34,594 [402]	0.7185	160° [213, 295,373]	1.49807		
131.2 6,000 [49]	280 33,713 [371]			± 0.00006	25° [396,397]	
114.6 5,000 [49]	280 32,782(w) [402]	0.7310	150.0° [248, 295,373]	1.49815	25° [338]	
96.6 4,000 [49]	270 28,852(w) [402]			1.49819	25° [391]	⊖
93.2 3,871 [289]	260 26,372 [371]	0.7448	140.1° [248]	1.49823	25° [227]	
88.3 3,629 [289,290]	260 25,329 [402]	0.7440	140° [213, 295,373]	1.49825(h)	25.00° [276]	
86.4 3,532 [290]	255 24,306.05 [126]			1.4983	25° [112]	
84.3 3,436 [289]	250 22,182(w) [402]	0.7470	130.2° [248]	1.4992	25° [225]	⊕
83.4 3,387 [289]	240 20,231 [371]	0.7472	130.0° [248]	1.4993	23.7° [115]	

Additional Data

* $t_m = 5.459 + 0.028149\, p_{atm} - 0.000001546\, p_{atm}^2$ (1 to 4,000 atm

† $t_m = 5.461 + 0.026732\, p_{atm} - 0.0000009202\, p_{atm}^2$ (1 to 9,000 atm)

‡ $\frac{1}{T_b} = 0.004446498 - 0.00055258 \log_{10} p_{mm}$ (14 to 200 mm)

§ $\frac{1}{T_b} = 0.00452385 - 0.00058937 \log_{10} p_{mm}$ (200 to 790 mm)

¶ $\frac{1}{T_b} = 0.004586504 - 0.00060907 \log_{10} p_{mm}$ (790 to 5,500 mm)

⊙ $\frac{dD}{dt} = -0.00106304[1 + 0.00088019(t-20)]/°C$ (0 to 100°C)

⊖ $\frac{dD}{dt} = -0.00108579[1 - 0.0014520(t-20) + 0.00002675(t-20)^2]/°C$ (0 to 160°C)

⊕ $\frac{dn}{dt} = -0.00063190[1 + 0.002461(t-20)]/°C$ (2 to 80°C)

The notes designated by letters appear on pages 37 and 38.

M. P.,°C		B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Benzene		240	19,393.12[126]	0.7568	130°[295,]	1.49898	22°[142]	
(Continued)		240	19,352(w)[402]		[373]	1.49966	22°[37]	
		230	16,825(w)[402]	0.7576	130.0°[248]	1.49982	22°[157]	
	atm	220	15,192[371]	0.7692	120.2°[248]	1.4979	21.5°[115]	
80.7	3,387[345]	220	14,493(w)[402]	0.7692	120°[213,]	1.50008	21.37°[124]	
78.5	3,145[290]	210	12,453(w)[402]		[295]	1.49900	21°[163]	
77.7	3,000[49]	200	11,134[371]	0.7692	119.9°[373]	1.4990	21°[108]	
73.6	2,903[289]	200	10,860[126]	0.7749	110.4°[248]	1.501545	20.5°[64]	
72.7	2,903[345]	200	10,650(w)[402]	0.7807	110.0°[246]	1.50143	20.1°[370]	
73.50	2,882[344]	190	9,045(w)[402]	0.7809	110°[373]	1.5007	18.5°[108]	
69.99	2,754[345]	180	7,630(w)[402]	0.7810	110°[295]	1.5027	18.5°[275]	
66.7	2,565[290]	170	6,386(w)[402]	0.7750	109.9°[248]	1.5030	18°[409]	
66.0	2,536[345]	160	5,300(w)[402]	0.79030	100.00°	1.50300	17°[163]	
63.8	2,420[289]	162	5,274.93[126]		[222]	1.502328	16.8°[268]	
63.5	2,420[345]	150	4,332(w)[402]	0.79038	100°[40]	1.503771	16.7°[217]	
63.67	2,418[344]	140	3,520(w)[402]	0.7919	100.0°[248]	±0.000007(u)		
60.00	2,232[345]	130	2,815(w)[402]	0.7927	100°[373]	1.50325	16.5°[400]	
56.0	2,032[290]	125	2,464[327]	0.7928	100°[213,]	1.5033	16.5°[391]	
56.5	2,000[49]	121	2,347.4[411]		[295]	1.5034	16°[163]	
55.02	1,974[345]	121	2,259.95[126]	0.8033	90.2°[248]	1.5038	16.0°[194]	
54.0	1,936[345]	120	2,243[106,318]	0.8004	90.1°[248]	1.5038	15°[135]	
53.7	1,936[289]	120	2,240[333,334]	0.80190	90°[40]	1.50402	15°[142]	
54.99	1,918[344]	120	2,236.80[25]	0.8041	90°[373]	1.50439	15°[81,350]	
50.03	1,747[345]	120	2,230(w)[402]	0.8042	90°[295]	1.50453	15°[163]	
45.20	1,506[344]	115.624	2,026.3[411]	0.81328	80.37°[103]	1.504551	15°[112]	
43.8	1,500[290]	115	1,983[333]	0.8118	80.0°[248]	1.503727	14.8°[268]	
43.15	1,452[345]	110	1,751[333,334]	0.8124	80°[34]	1.503819	14.4°[268]	
42.6	1,452[289]	110	1,746.20[25]	0.8126	80°[247]	1.50690	12.5°[7]	
42.06	1,408[345]	108	1,744[59]	0.8127	80°[213,295]	1.50565	12.3°[369]	
40.06	1,327[345]	109.601	1,741.0[411]	0.81331	80°[2]	1.505543	12.0°[268]	
34.41	1,053[344]	110	1,739(w)[402]	0.81367	80°[103]	1.50626	11.06°[124]	
31.7	1,016[49,290]	105	1,542[333]	0.81374	80°[40]	1.506051	11.0°[268]	
32.5	1,000[49]	103.621	1,489.2[411]	0.8145	80°[373]	1.506538	10.5°[268]	
32.2	968[77]	100	1,371[32]	0.8146	80.0°[248]	1.506792	10°[268]	
31.45	968[345]	100	1,348[333,334]	0.8121	79.9°[316]	1.50871	8.5°[274]	
30.2	968[289]	100	1,344[106,318,]	0.81297	79.9°[256]	1.50808	8.2°[186]	
31.51	936[344]		[319]	0.81360	79.74°[278]	1 50853	8°[142]	
30.05	917[345]	100	1,342.20[25]	0.8121	79.7°[248]	1.5100	8°[163]	
29.86	902[344]	100	1,339[327]	0.81380	79.70°[222]	1.50908	6.8°[370]	
29.59	895[345]	100	1,335(w)[402]	0.8150	79.2°[99]	1.5103	6.5°[163]	
30.00	887[77]	97.683	1,268.1[411]	0.8147	78.0°[294]	1.51011	5.6°[370]	
27.99	808[344]	95	1,184[326]	0.81556(g)	77.98°[276]	1.5103	5.51°[169]	
25.00	705[77]	95	1,180[338]	0.8178	75°[189]	1.5122	2.0°[115]	
25.05	696[344]	91.787	1,074.6[411]	0.818721	75°[280,281]	1.49051	$n^{30}_{H\alpha}$ [81]	
24.84	696[344]	90	1,039[32]	0.81886(g)	75°[276]	1.49312	$n^{25}_{H\alpha}$ [220]	
21.5	629[290]	90	1,018[333,334]	0.81923	75°[2]	1.49329(h)	$n^{25}_{H\alpha}$ [151]	
20.00	521[77]	90	1,015[318]	0.8220	72.7°[236]	1.4933	$n^{25}_{H\alpha}$ [75]	
20.13	516[345]	90	1,014.40[25]	0.82244	72.06°[363]	1.49441	$n^{22}_{H\alpha}$ [142]	
19.96	508[344]	90	1,008(w)[402]	0.82403(g)	70.36°[276]			
20.03	499[344]	90	1,008[358]	0.8226	70.2°[248]			

The notes designated by letters appear on pages 37 and 38.

M. P.,°C		B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Benzene		85.912	906.1 [411]	0.8231	70.1° [348]	1.4934	$n_{H\alpha}^{21.5}$ [115]	
(Continued)		86	906 [69]	0.8234	70° [247]	1.49547	$n_{H\alpha}^{20.5}$ [64]	
		85	879 [333]	0.8237	70.0° [268]	1.49638	$n_{H\alpha}^{20}$ [185]	
	atm	84.079	857.82 [335]	0.8241	70° [189]	1.49646	$n_{H\alpha}^{20}$ [178]	
19.33	486 [344]	83.285	837.56 [335]	0.82442	70° [40]	1.49668	$n_{H\alpha}^{20}$ [53]	
19.35	484 [345]	82.606	820.59 [335]	0.8246	70° [219]	1.4967	$n_{H\alpha}^{20}$ [54]	
18.85	484 [77]	82.022	806.21 [335]	0.8248	70° [239,373]	1.49678	$n_{H\alpha}^{20}$ [407,408]	
17.8	484 [289]	81.417	791.46 [335]	0.8249	70° [358]	1.49690	$n_{H\alpha}^{20.0}$ [170]	
17.80	432 [344]	80.822	777.20 [335]	0.82492	70° [103]	1.50043	$n_{H\alpha}^{17.7}$ [95]	
17.56	412 [154]	80.29		0.82505	70° [2]	1.4988	$n_{H\alpha}^{16.0}$ [194]	
16.44	387 [154]	−80.48	770 [278]	0.8260	70.0° [248]	1.49938	$n_{H\alpha}^{15}$ [142]	
15.78	368 [344]	80.2	768 [113]	0.8229	69.9° [218]	1.49952	$n_{H\alpha}^{15}$ [81,350]	
15.32	348 [154]	80.5	767.2 [137]	0.8270	67.9° [236]	1.499659	$n_{H\alpha}^{15}$ [113]	
15.00	338 [77]	80.299	764.84 [335]	0.8292	65.0° [268]	1.50119	$n_{H\alpha}^{12.3}$ [369]	
14.77	329 [154]	80.35	764.68 [80]	0.82993(g)	65° [276]	1.4983	$n_{H\alpha}^{10.0}$ [115]	
14.83	325 [344]	80.30	763.47 [80]	0.83078	65° [2]	1.50381	$n_{H\alpha}^{8.5}$ [274]	
13.95	300 [154]	80.35	763.1 [137]	0.8294	64.88° [169]	1.50370	$n_{H\alpha}^{8.2}$ [186]	
13.8	300 [77]	80.35	763 [360]	0.83316	62.30° [363]	1.50383	$n_{H\alpha}^{8}$ [142]	
13.65	290 [154]	80.0		0.8322	61.8° [348]	1.50721	$n_{H\beta}^{30}$ [81]	
13.25	275 [154]	−80.2	763 [35]	0.83496	60.70° [222]	1.5094	$n_{H\beta}^{28.6}$ [115]	
12.53	251 [154]	80.3	762.9 [137]	0.8337	60.3° [348]	1.50985	$n_{H\beta}^{25}$ [151]	
12.45	250 [154]	80.27		0.83594	60.3° [216]	1.5109	$n_{H\beta}^{23.7}$ [115]	
11.99	232 [154]	±0.01	762 [174]	0.8364	60.2° [248]	1.51090	$n_{H\beta}^{22}$ [142]	
11.80	225 [154]	80.3.	761.5 [137]	0.8342	60.0° [247,	1.5095	$n_{H\beta}^{21.5}$ [115]	
11.10	200 [154]	80.45	761.1 [381]		248]	1.511207	$n_{H\beta}^{20.5}$ [64]	
10.87	193 [154]	79.7		0.8346	60° [169]	1.51301	$n_{H\beta}^{20}$ [185]	
10.41	176 [344]	−80.0	761 [116]	0.8353	60° [304]	1.51323	$n_{H\beta}^{20}$ [178]	
10.40	175 [154]	80.25	760.8 [137]	0.83546	60° [40]	1.51324	$n_{H\beta}^{20.0}$ [170]	
10.00	161 [77]	79.9	760.4 [256]	0.8357	60° [91,239,	1.51339	$n_{H\beta}^{20}$ [53]	
10.12	156 [345]	80.16	760.23 [80]		365,373]	1.51350	$n_{H\beta}^{20}$ [407,40]	
9.78	155 [154]	80.4	760.2 [43]	0.8358	60.0° [268]	1.5144	$n_{H\beta}^{18.5}$ [275]	
9.60	150 [154]	80 08	758.39 [80]	0.83584	60° [103]	1.51480	$n_{H\beta}^{17.7}$ [95]	
9.66	141 [344]	80.1	758 [191]	0.8359	60° [352]	1.5156	$n_{H\beta}^{16.0}$ [194]	
9.24	136 [154]	80.09	758.0 [406]	0.83602(g)	60.00° [69]	1.51610	$n_{H\beta}^{15}$ [142]	
8.90	125 [154]	80	757.5 [333,334]	0.83642	60° [2]	1.51633	$n_{H\beta}^{15}$ [81,350]	
8.15	100 [154]	80.04		0.83645	60° [129]	1.516392	$n_{H\beta}^{15}$ [113]	
7.45	75 [154]	−80.14	757.4 [346]	0.8368	59.54° [243]	1.51817	$n_{H\beta}^{12.3}$ [369]	
6.80	50 [154]	80.12	757.3 [203]	0.8352	59° [348]	1.5148	$n_{H\beta}^{10.0}$ [115]	
6.10	25 [154]	80.03	757.24 [80]	0.8376	58 90° [272]	1.52086	$n_{H\beta}^{8.5}$ [274]	
5.5006	0 [300]	80.2		0.83751	58.33° [363]	1.52055	$n_{H\beta}^{8.2}$ [186]	
5.415	0 [98]	−80.3	757 [338]	0.8370	58.3° [236]	1.52069	$n_{H\beta}^{8}$ [142]	
5.35	0 [345]	80.0		0.8392	56.7° [120]			
5.33	0 [154]	−80 2	757 [111]	0.8403(g)	56.00° [69]			
		80.001	756.49 [80]	0.8397	55° [34]			
		79.9		0.8403	55.0° [268]			
		−80.1	756 [357]	0.84198	55° [2]			
		80	755 [106,318,	0.8387	54.8° [381]			
			319,368]	0.8429	52.0° [348]			
		80.0	753.6 [157]	0.844675(g)	52.00° [69]			
		79.9	753.4 [296]	0.8470	50.4° [248]			

The notes designated by letters appear on pages 37 and 38.

M. P., °C	B. P., °C	@ 760mm	D_4^{20}		n_D^{20}		Additional Data
Benzene *(Continued)*	79.796	753 08[335]	0.8453	50.2°[248]	1.5242	$n^{2.0}_{H\beta}$ [115]	
	79.5		0.8450	50°[247]	1.5201	$n^{25}_{H\gamma}$ [75]	
	−79.7	753[90]	0.8456	50.0°[268]	1.52015(h)	$n^{25}_{H\gamma}$ [151]	
	80	752.74[25]	0.846170	50°[280,281]	1.52119	$n^{22}_{H\gamma}$ [142]	
	79.78	752.6[84]	0.84639	50°[40]	1.5205	$n^{21.5}_{H\gamma}$ [115]	
	79.6	752[147]	0.8466	50°[239,347]	1.522042	$n^{20.5}_{H\gamma}$ [61]	
	79.7		0.8467	50°[91,358]	1.52375	$n^{20}_{H\gamma}$ [407,408]	
	−79.8	751.4[258]	0.84678	50°[103]	1 52377	$n^{20}_{H\gamma}$ [53]	
	79.98	751[102]	0.84748	50°[2]	1.52380	$n^{20}_{H\gamma}$ [178]	
	79.5		0.84911(g)	48.00°[69]	1.5261	$n^{16.0}_{H\gamma}$ [194]	
	−79.7	750.7[224]	0.84874	47.95°[363]	1.52656	$n^{15}_{H\gamma}$ [142]	
	79.75	750[362]	0.8486	47.0°[348]	1.52681	$n^{15}_{H\gamma}$ [350]	
	79.70	750[308]	0.8494	46.50°[169]	1.526963	$n^{15}_{H\gamma}$ [113]	
	79.64		0.8510	46.5°[236]	1.52867	$n^{12.3}_{H\gamma}$ [369]	
	−79.70	749.0[197]	0.8500	46.0°[294]	1.5258	$n^{10.0}_{H\gamma}$ [115]	
	79.6	748.6[9,10]	0.85104	45.95°[222]	1.53154	$n^{8.5}_{H\gamma}$ [274]	
	79.49		0.8503	45.0°[268]	1.53097	$n^{8.2}_{H\gamma}$ [186]	
	−79.55	747.7	0.85201(g)	45°[276]	1.53125	$n^{8}_{H\gamma}$ [142]	
		−748.3[239]	0.85291	45°[2]	1.50247	n^{20}_{He} [87]	
	79.6	748[83]	0.8536	45°[209]	1.497005	n^{15}_{He} [113]	
	79.6	747.5[408]	0.8507	44.8°[348]	1.50446	n^{15}_{He} [350]	
	79.2	747 2[256]	0.85343(g)	44.00°[69]	(x)		
	79.2	746 7[256]	0.8533	43.0°[268]			
	79.65	746.2[143]	0.85462	42.65°[272]			
	79.6	744.5[261,268]	0.85512(g)	42.16°[276]			
	79.47	744.5[197]	0.8547	41.5°[381]			
	79.6	743.1[296]	0.8557	41°[379]			
	79.4	743[339]	0.85683	40.7°[245]			
	79.32	742.3[143]	0.8555	40.5°[348]			
	79.6	742[57]	0.8557	40°[247]			
	79	742[31]	0.8559	40.0°[268]			
	79.2	740.8[84]	0.85661	40°[119]			
	79.2	740[88]	0.8569	40°[304]			
	79	740[32]	0.85697(g)	40°[347]			
	79	739.5[262]	0.85721	40°[40]			
	79.201	739.35[335]	0.8573	40°[358]			
	79.3	739[53]	0.8575	40°[239]			
	78.1	735.75[201]	0.85750(g)	40°[276]			
	78.70		0.85752	40°[129]			
	−78.73	735[63]	0.8576	40°[91,365,373]			
	78.9	733[65]					
	79.2	731.1[321,322]	0.85765	40°[103]			
	78.6	728.9[315]	0.85769(g)	40.00°[69]			
	78.606	725.77[335]	0.8578	40°[267]			
	78.45	724[352]	0.85829	40°[2]			
	78.36	720[124]	0.8587	38.3°[379]			
	78.30	718 6[124]	0.85963(g)	38°[276]			
	78.0	718[400]	0.8617	36.15°[243]			
	78.015	712.55[335]	0.86183(g)	36°[276]			
	78.0	712.5[163]	0.8620	36.0°[236]			

The notes designated by letters are shown on pages 37 and 38.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Benzene	77.8 707.52[315]	0.86205(g) 36.00°[69]		
(Continued)	77.7 700 7[321,322]	0.8612 35.0°[268]		
	77.9 700[167]	0.86362 35°[2]		
	77.430 699.60[335]	0.8639 35°[209]		
	76.841 686.81[335]	0.8609 34.95°[304]		
	76 65 684.6[296]	0.86310 34.95°[350]		
	76.3 675.41[315]	0.8626 34.0°[348]		
	76.261 674.35[335]	0.86393(g) 34°[276]		
	75.532 658.96[335]	0.8616 33.51°[169]		
	75 650[333]	0.86466 33.51°[350]		
	74.9 643.7[315]	0.86531 32.90°[350]		
	75.0 642.3[167]	0.8645 32.5°[381]		
	74.9 640[285]	0.86613(g) 32°[276]		
	74.352 633.90[411]	0.866245(g) 32.00°[69]		
	74.1 630.3[296]	0.8658 31.0°[348]		
	73.4 614.1[256]	0.8659 31.0°[268]		
	73.2 610.79[315]	0.86828 30.10°[222]		
	72.9 606.6[256]	0.8665 30°[247]		
	73.0 601.5[321,322]	0.86657 30°[60]		
	73.0 600[167]	0.86704 30°[287,288]		
	72.1 600[399]	0.86719 30°[119]		
	72.0 588[62]	0.8672 30°[292]		
	71.85 582.0[296]	0.8679 30°[358]		
	71 575[32]	0.86796 30°[40]		
	70 551.5[106,318]	0.8680 30°[267]		
	70 551.2(w)[319]	0.868020(g) 30°[118]		
		0.86825(g) 30°[276]		
	70 551[333,334]	0.86828(g) 30°[50]		
	70.1 550[167]	0.86836 30°[45]		
	69.5 550[399]	0.8684 30°[81,91]		
	70 548.16[363]	0.86840(g) 30°[58,76]		
	70 547.41[25]	0.86844 30°[350]		
	70.0 547.4[167]	0.8685 30°[231]		
	70 547[188]	0.86856 30°[103]		
	69.25 534.6[296]	0.86891 30°[2]		
	68.625 525.76[411]	0.8697 30°[14]		
	69 525.4[59]	0.8691 28.8°[236]		
	67.7 510.05[315]	0.8697 28.8°[350]		
	67.3 500.5[321,322]	0.8709 28.6°[115]		
	67.4 500[167]	0.870586(g) 28.00°[69]		
	67.2 497.6[296]	0.8710 27.3°[36]		
	66 477[323]	0.8690 27°[163]		
	65 463[333,334]	0.8704 26.9°[36]		
	65.0 461.2[157]	0.87178 26.9°[320]		
	64.2 459.49[315]	0.8706 26.7°[36]		
	64.2 454.1[256]	0.8708 26.5°[36]		
	64.1 450.1[256]	0.8713 26.1°[36]		
	64.4 450[167]	0.8715 26 0°[268]		
	63.6 450[399]	0.8738 25.9°[36]		
	63.6 440.0[296]	0.8739 25.8°[36]		

The notes designated by letters are given on pages 37 and 38.

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
Benzene	62.940	433.6[411]	0.8719	25.7°[36]		
(Continued)	63	433.0[59]	0.87336	25.25°[272]		
	60.9	401[321,322]	0.87343	25.25°[350]		
	60.3	400[399]	0.8732	25.13°[28]		
	60.0	395.9(w)	0.8734	25.13°[212]		
		[319]	0.8724	25°[116]		
	60	394.75(w)	0.872627	25°[280,281]		
		[106,318]	0.8728(g)	25°[173,225]		
	60	389.34[25]	0.87287	25°[46]		
	60	389[323]	0.87288	25°[220]		
	60.0	388.6[157]	0.8729	25°[189]		
	59.3	380[323]	0.8731	25°[385,386,		
	58.8	371.4[296]		388]		
	58.5	369[32]	0.8733(g)	25°[61,387]		
	57.298	355.1[411]	0.8734	25°[353,358]		
	57.5	354.6[59]	0.87345	25°[314]		
	57.0	350[157]	0.8735	25°[99,157]		
	56.6	350[399]	0.8736	25°[26,257]		
	56.4	339.5[296]	0.87360			
	55.0	323.3[157]	±0.00005	25.00°		
	54.7	314.5[256]		[260]		
	54.25	313.9[296]	0.87362(g)	25°[168,276]		
	53.2	303.5[256]	0.87363	25°[21,22]		
	52.9	301.4[321,322]	0.87366			
	52.6	300[157]	±0.00002	25°[396]		
	52.5	300[399]	0.873670			
	51.697	289.1[411]	±0.000004			
	52	288.5[59]		25°[397]		
	51.85	287.4[296]	0.87369	25°[350]		
	50	274.5(w)	0.8737	25°[85]		
		[319]	0.8738	25°[75]		
	50	273.0[324]	0.8741	25°[66]		
	50	271[323]	0 87417	25°[2]		
	50	270.17[25]	0.8742	25°[209]		
	50.0	269.0[157]				
	50	268[146,326]	0.874212	D_{25}^{25} [384]		
	49.99	268.0[375]	0.8754	D_{25}^{25} [180]		
	50.1	267.0[296]	0.8758	D_{25}^{25} [224]		
	49.36	263.3[296]	0.87596	D_{25}^{25} [157]		
	47.9	250[157]	0.8767	D_{25}^{25} [273]		
	47.8	250[398]	0.87411	24.42°[363]		
	47.8	249.6[321,322]	0.87270	24.27°[190]		
	47.94	249.1[296]	0.8740	24°[183]		
	46	233.1[59]	0.87485(g)	24.00°[69]		
	45.97	230.0[296]	0.8742	23.8°[36]		
	45	224[188]	0.8760	23.7°[115]		
	44.7	221.0[296]	0.8740	23°[164]		
	45.0	220.7[157]	0.8741	23.0°[268]		
	43.71	209.6[296]	0.8748	23°[107]		
	42.5	202.1[321,322]				

The notes designated by letters are shown on pages 37 and 38.

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
Benzene	42.1	200[167,399]	0.87575	23°[355]		
(Continued)	42.0	200[32]	0.8759	22.3°[36]		
	41.41	190.8[296]	0.87648(g)	22°[284]		
	41.3	187.9[256]	0.87651	22°[283]		
	40	186.9[59]	0.8773	21.5°[115]		
	40	185.7(w)	0.87790	21°[350]		
		[106]	0.87811	21°[45]		
	40	185.5[318]	0.87786	20.58°[362]		
	40	185.3(w)	0.8773	20.5°[381]		
		[319]	0.87889	20.5°[64]		
	40	184.0[324]	0.87874	20.2°[350]		
	41.5	182.5[214]	0.87893	20.2°[194]		
	40	182.35[25]	0.8783	20.15°[28]		
	40.0	181.1[157]	0.8789	D_{20}^{20} [147]		
	40	177.3[326]				
	39.35	174.95[298]	0.88008	D_{20}^{20} [162]		
	40.1	174.9[256]	0.8790	19.9°[373]		
	38.78	173.0[296]	0.88034	$D_{19.80}^{19.80}$ [61]		
	35.5	150.8[296]	0.88112	19.75°[272]		
	35.4	150.5[214]	0.87948	19.5°[350]		
	35.4	150.2[321,322]	0.8802	19°[163]		
	35.4	150[167]	0.8815	18.5°[275]		
	35.2	150[399]	0.88063	18.4°[350]		
	35	148.8[59]	0.88084	18.4°[194]		
	34.8	147[323]	0.8799	18.1°[379]		
	35.0	146.3[157]	0.8808	18°[376]		
	35	145.4[325,	0.88103	18°[246]		
		328]	0.88118	18.0°[402]		
	33.6	137.9[296]	0.88181	18°[228]		
	31.4	125.85[296]	0.8823	18°[164]		
	30.87	123.45[296]	0.8829	18°[325]		
	30	121.8[324]	0.88110	17.95°[350]		
	31.0	120[214]	0.88101	17.90°[363]		
	30	119.25[25]	0.8819	17.7°[95]		
	30	118.6(w)	0.8800	17.4°[348]		
		[319]	0.88190	17.2°[350]		
	30.0	118.2[157]	0.8821	17.2°[236]		
	30	118[32]	0.8804	17.0°[348]		
	30	117.45[368]	0.8830	17°[163]		
	30	116[327]	0.8826	16.35°[169]		
	30	115.8[326,328]	0.88279	16.35°[350]		
	28.15	109.35[296]	0.88284	16.3°[350]		
	26.4	100[167]	0.88307	16.3°[194]		
	26.3	100[321,322]	0.8828	16.20°[169]		
	26.0	100[399]	0.88293	16.2°[350]		
	25.37	96.4[296]	0.88226	16°[315]		
	25.0	95.90[332]	0.88422	16°[155]		
	25	95.9[244]	0.88336	15.8°[350]		
	25	94.9[106]	0.8835	15.8°[236]		
	25.0	94.0[157]				

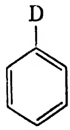
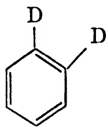
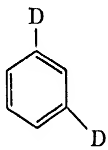
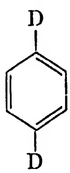
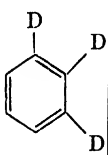
The notes designated by letters are given on pages 37 and 38.

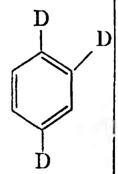
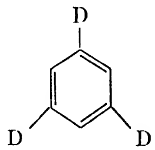
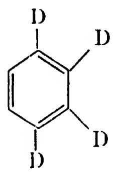
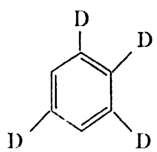
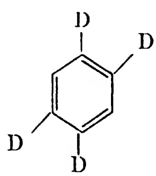
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
Benzene	23.5	92.0[59]	0.8824	15.5°[268]		
(Continued)	22.97	85.5[296]	0.8845	15.5°[150]		
	22.3	80.5[214]	0.8846	$D_{15.5}^{15.5}$[165]		
	20.54	77.25[296]	0.8850	15.4°[163]		
	20	76.5[106,318]	0.8826	15°[110]		
	20	76.2(w)[319]	0.8828	15°[82]		
	20	76.0[324]	0.883573	15°[280,281]		
	20	75.6[214]	0.8841	15°[81]		
	20	75.14[25]	0.8840	15.0°[122]		
	20.0	75.0[15,167,188]	0.88420	15°[350]		
	20.0	74.7[157]	0.8842	15°[237]		
	20	74.66[139]	0.8844	15°[358]		
	20	74.13[368]	0.8846	15°[66,209]		
	20	74.0[326,328]	0.88462	15°[2]		
	18.5	71.4[59]	0.8853	D_{15}^{15}[273]		
	18	71[32]	0.8872	15°[163,164]		
	18.72	70.75[296]	0.88434	14.95°[222]		
	18	70[15]	0.88501	14.5°[191]		
	16.85	64.5[296]	0.8847	14.40°[363]		
	15	59[146]	0.8853	14°[255]		
	15.0	58.2[157]	0.88551	13.5°[45]		
	14.66	57.8[296]	0.88578	13.5°[350]		
	15	55[317]	0.88638	12.87°[359]		
	14	54.9[59]	0.8867	12.3°[369]		
	12.51	51.65[296]	0.88741	11.92°[363]		
	12.1	50[167]	0.8871	11.2°[294]		
	11.8	50[399]	0.8886	10.7°[143]		
	11.7	49[167]	0.8876	10.5°[348]		
	11.3	48[167]	0.8868	10.0°[115]		
	10.44	47.25[296]	0.8878	10.0°[268]		
	10.9	47[167]	0.8880	10°[247]		
	10.5	46[167]	0.88834	10°[119]		
	10	46.0(w)[319]	0.88930	10°[40]		
	10.0	45.4[157]	0.8894	10°[239]		
	10	45.34[25]	0.88945	10°[350]		
	10.6	45.19[368]	0.88946	10°[363]		
	10.1	45[167]	0.8895	10°[91]		
	10	44.6[326]	0.88956	10°[245]		
	9.6	44[167]	0.88962	10°[103]		
	9.21	43.0[296]	0.8898	10°[66]		
	9.2	43[167]	0.88982	10°[2]		
	8.8	42[167]	0.8900	D_{10}^{10}[273]		
	8.5	41.8[59]	0.89137	8.5°[274]		
	8.37	41.8[296]	0.8896	8.4°[348]		
	8.3	41[167]	0.8906	8.2°[186]		
	7.98	40.9[296]	0.8904	8.0°[348]		
	7.8	40[167]	0.89291	7.1°[194]		
			0.89260	7°[350]		

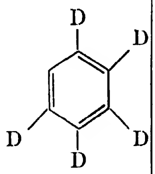
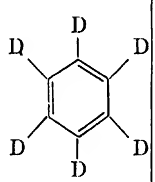
The notes designated by letters are shown on pages 37 and 38.

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
Benzene	7	40[15]	0.89262	7°[45]		
(*Continued*)	7.47	39.85[296]	0.8917	6.7°[348]		
	7.4	39[167]	0.89370	6.06°[108]		
	7.03	38.45[296]	0.89451	5.6°[194]		
	6.9	38[167]	0.8928	5.4°[348]		
	6.25	37.2[296]	0.89473	5°[103]		
	6.4	37[167]	0.89502	5°[2]		
	5.74	36.15[296]	0.8949	D_6^5[273]		
	5.9	36[167]	0.88811	4.96°[98]		
	5.48	35.9[296]	1.00619 (solid)	4°[98]		
	5.31	35.4[296]	1.00707 (solid)	3°[98]		
	5.06	35.2[296]	0.8979	2.0°[115]		
	5.30	35.05[296]	1.00863 (solid)	2°[98]		
	5.4	35[167]	0.89985	0.15°[350]		
	5.0	34.7[157]	0.9000	0.15°[236]		
	4.84	34.7[296]	0.8988(g)	0°[348]		
	4.9	34[167]	0.89888	0°[119]		
	4.4	33[167]	0.89938	0°[103]		
	4	31.5[59]	0.89944	0°[45]		
	3.13	31.15[296]	0.899487	0°[280,281]		
	3.08	30.95[296]	0.8997	0°[304]		
	2.03	29.15[296]	0.89990	0°[222]		
	1.23	28.15[296]	0.89993	0°[40]		
	0.98	27.9[296]	0.89996	0°[350]		
	0.0	26.8(w)[319]	0.90000	0°[405]		
	−0.02	26.8[296]	0.90006	0°[373,402,404]		
	0	26.51[25]	0.90009	0°[365]		
	0.0	26.5[157]	0.90023	0°[2]		
	−0.97	25.1[296]	0.978 (solid)	0°[247]		
	0.0	25[15]	1.01084 (solid)	0°[98]		
	−1.84	24.0[296]	1.0126 ±0.0011	0°[312]		
	−1.0	23.6[59]	1.0151	0°[299]		
	−5	17.4[59]	1.0235	−8.6°[133]		
	−10	14.83[25,140]	0.985 (solid)	−20°[247]		
	−14	9.2[59]	1.0519	−22°[55]		
	−19	6.5[59]	1.099	−70°[55]		
	−48.8	0.361[368]	1.062	−79°[38]		
	−52.4	0.247[368]	1.101 (y)	−183°[38]		
	−56.0	0.173[368]				
	−77.5	0.0151[25]				

The notes designated by letters are shown on pages 37 and 38.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Monodeuterobenzene 				
5.5 [158]	79.60 [195]			
1,2-Dideuterobenzene 				
	79.95 [195]			
1,3-Dideuterobenzene 				
	79.75 [195]			
1,4-Dideuterobenzene 				
	79.70 [195]			
1,2,3-Trideuterobenzene 				
	79.80 [195]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4-Trideuterobenzene 				
	79.85 [195]			
1,3,5-Trideuterobenzene 				
	79.55 [195]			
1,2,3,4-Tetradeuterobenzene 				
	79.60 [195]			
1,2,3,5-Tetradeuterobenzene 				
	79.65 [195]			
1,2,4,5-Tetradeuterobenzene 				
	79.60 [195]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Pentadeuterobenzene 				
	79.60[195]			
Hexadeuterobenzene 				
	79.3			
6.8[88,89,156,157,395]	79.4[89]	0.9465[89]	1.4997[89]	
6.62[176]	79.3[157]	0.94829[176]	1.49779 22°[157]	
6.5[1]	80.0 773.6[157]	0.954[63]		
	78.5 740[88]	0.9417 25°[47]		
	75.0 659.5[157]	0.9429 25°[157]		
	70.0 562.0[157]	0.9404 D_{25}^{25}[1]		
	65.0 473.8[157]	0.94560 D_{25}^{25}[157]		
	60.0 399.4[157]	0.954 ± 0.0005 17°[67]		
	55.0 332.5[157]			
	50.0 276.7[157]			
	45.0 227.1[157]			
	40.0 186.3[157]			
	35.0 150.7[157]			
	30.0 121.8[157]			
	25.0 96.9[157]			
	20.0 77.1[157]			
	15.0 60.1[157]			
	10.0 45.9[157]			
	5.0 35.9[157]			
	0.0 27.5[157]			

Additional Data

* $\frac{1}{T_b} = 0.004513756 - 0.000582066 \log_{10} p_{mm}$ (120 to 775 mm)

† $\frac{1}{T_b} = 0.004463126 - 0.000558222 \log_{10} p_{mm}$ (25 to 125 mm)

(a) This melting point is the average of two or more determinations.

(b) The melting point 5.5 is found in references 1, 41, 73, 88, 89, 153, 171, 175, 193, 226, 230, 259, 289, 312, 330, 336, 377.

(c) This figure is given as a freezing point in the literature.

(d) The boiling point 80.5 is found in references 48, 67, 134, 151, 161, 187, 207, 225, 269.
(e) The boiling point 80.4 is found in references 11, 108, 110, 144, 192, 367, 374, 380.
(f) The boiling point 80.3 is found in references 21, 22, 121, 165, 167, 273, 321, 322, 323.
(g) This density is the average of two or more determinations.
(h) This refractive index is the average of two or more determinations.
(i) The melting point 5.4 is found in references 19, 20, 25, 49, 81, 139, 183, 208, 210, 265, 266, 285, 311, 329, 356, 367.
(j) The boiling point 80.2 is found in references 32, 69, 79, 86, 132, 198, 227, 249, 343, 404, 405.
(k) This boiling point is the average of two or more determinations.
(l) The boiling point 80.1 is found in references 3, 46, 92, 125, 127, 131, 135, 205, 226, 336, 337, 351, 352, 364.
(m) This refractive index was determined on the vapor.
(n) This sample was dried 10 years over phosphoric oxide. The same material dried one month melted at 5.4.
(o) The boiling point 80.0 is found in references 13, 59, 87, 109, 139, 199, 242, 251, 252, 286.
(p) The boiling point 80 appears very frequently in the literature. Most of the references were excluded because the determinations seemed to be only approximations.
(q) This sample was dried 8 years and 8 months over phosphoric oxide. This sample originally boiled at 80.
(r) This sample was dried 8 years and 6 months over phosphoric oxide. This sample originally boiled at 80.
(s) This sample was dried 3 years. This sample originally boiled at 79.6.
(t) This sample was dried for 10 years over phosphoric oxide.
(u) This sample was especially dried over phosphoric oxide.
(v) These samples were especially dried over sodium and potassium.
(w) This pressure is an average of two or more determinations.
(x) Refractive indices of other lines may be found in references 44, 71, 112, 113, 115, 169, 255, 275, 307.
(y) Densities at various pressures are found in references 59, 256.

Benzene References

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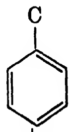
Toluene
(Methylbenzene)



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
−95.18	**110.56**	**0.86650**	**1.49624**	Crit. Temp. (°C)
−93[139,177]	111.0[78,168]	0.8648[29]	1.4947[55]	321[106]
−93.5[39]	110.9[234]	0.8649[179]	1.4949[65]	320.9[51]
−93.7[30]	110.8–110.9[237]	0.86502[163]	1.4951[6]	320 8[72]
−94[19]	110.6–110 9[101]	0.86516[68]	1.4955[127,136]	320.6[1,70,104,137]
−94.2[71]	110.80[43,218]	0.8652[55]	1.49552[22,167]	
−94.5[132,213]	110.80 ± 0.02	0.8654[20]	1.4958[80,109]	320.5[75,233]
−95.0– −94.5[99]	760 ± 10[217]	0.86549[248]	1.49606[229]	319.5[63]
−94.6[86]	110.8[32,39,62,90,144,169,206,236]	0.86550[248]	1.49613[208]	318.1(f)[145]
−95.0[146,167,214,216,217]		0.8656[22,226]	1.4962[56,144,206,228]	
−95[37,56,115,140,215]	110.60–110.80[244,245]	0.8657[223]	1.49630[182]	Crit. Pressure (mm Hg)
−95.1[131,135,206,220]	110 4–110.8[83]	0 8658[178]	1.4964[81]	
−95.143 ± 0.005[219]	110.3–110.8[167]	0.86590[16]	1.49647[103]	
−95.15[95,205]	110.75[112]	0 8659[21,194]	1.4965[85,171]	31,616.0[1,104,106]
−95.2[251]	110.74[67]	0.86597[17]	1.4966[21,236]	
−95.7– −95.4[143]	110 72 ± 0.01[10]	0.8660[40,81]	1.49675[133]	31,593.2[1]
−95.70[97]	110.70 ± 0.01[212,219]	0.86604[109]	1.49692[200]	
−95.7[142,152]	110.70[64,220]	0 86606[208]	1.4971[98,207]	Crit. Density
−97[162]	110.7[38,47,104,137,200,213]	0.8661[15,69,133,181]	1.49712[143]	
	110.65–110.70[133]	0.8663[85]	1.00209(c)[84]	0.304[223]
	110.6–110.7[169,200]	0.8665[200]	1.45639 90.35°[164]	0.296[63]
	110.5–110.7[241]	0.86697[167,252]	1.48839 35°[130]	
	110.62[52]	0.8670[4]	1.49178 30°[41]	
	110.615(a)[126]	0.8677[236]	1.4912 27°[154]	
	110.612–110.614[208]	0.7025 169.4°[147]	1.4917 26.3°[7]	
	110.606[252]	0.7166 159.2°[147]	1.49323 25.4°[186]	
	110.6(b)	0.7286 150.0°[147]	1.49255 25.2°[42]	
	110.5–110.6[242,243]	0.7414 140.0°[147]	1.4924 25°[7]	
	110.4–110.6[187]	0.7535 132.5°[172]	1.49337 25°[186]	
	110.2–110.6[183]	0.7533 129.9°[147]	1.49365 25°[130]	
	110.56 ± 0.03[96]	0 76217 126.85°[131]	1.49366 25°[231]	
	110.50[249]		1.49375 25°[129,239]	
	110.50 ± 0.05[182]	0.7650 120.2°[147]	1.4938 25°[238]	
	110.5(c)	0.77694 110.8°[156]	1.49653 19.9°[229]	
	110.4–110.5[157]	0.7767 110.1°[147]	1.4964 19.4°[209]	
	110.4[21,61,74,92,150]	0.7780 109.8°[191]	1.49750 17°[89]	
	110.4 ± 0 2[55]	0.77807 109.2°[190]	1.49782 16.35°[228]	
	110.3[14,54,107,120,184,189]	0.7811 105.17°[148,149]	1.49811 16.13°[48]	
	110.2–110.3[153]		1.4978 16°[89]	
	110.2[151]	0.7823 104.0°[235]	1.4989 15.7°[100]	
	110.0[113]	0.78963 100.25°[131]	1.49894 15.2°[198]	
			1.4988 15°[89]	

The notes designated by letters are shown on page 54.

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Toluene	110(d)[18,26,79,108,132,138,192]		0.7878	100.0°[147]	1.49985	15°[41,218]	*
(Methylbenzene)			0.7931	100°[121]	1.4992	14.7°[110]	
(*Continued*)	109.5–110[109]		0.7873	99.19°[148,149]	1.50236	10.7°[164]	
	109.5 ± 0.1[45]				1.50349	8.5°[166]	
	320 6	31,616.0[38]	0.7895	99.17°[225]	1.50261	8.18°[48]	
	320.0	31,525[104]	0.7874	99.01°[148,149]	1.50264	7.0°[229]	†
	300	25,399[230]			1.50496	4.9°[229]	
	301.5	24,624[104]	0.7939	92.15°[235]	1.45231	$n_{H\alpha}^{90.35}$[164]	
	295	23,375.18[66]	0.79949	90 35°[164]	1.48725	$n_{H\alpha}^{30}$[41]	
	280	19,768[230]	0.7981	90.3°[117]	1.49111	$n_{H\alpha}^{20}$[22]	
	283.0	19,760[104]	0.8004	90°[69]	1.49365	$n_{H\alpha}^{16.35}$[228]	‡
	280.0	19,076[104]	0.8002	86.14°[148,149]	1.49510	$n_{H\alpha}^{15}$[218]	
	279.5	18,856[104]			1.49516	$n_{H\alpha}^{15}$[41]	
	264.0	16,256.4[38,104]	0.8084	80.1°[147]	1.49428	$n_{H\alpha}^{14.95}$[48]	
			0.8089	80°[226]	1.4944	$n_{H\alpha}^{14.7}$[110]	§
	260	15,086[230]	0.81017	80.00°[131]	1.49785	$n_{H\alpha}^{10.7}$[164]	
	253.5	13,269[104]	0.8113	80°[121]	1.49891	$n_{H\alpha}^{8.5}$[166]	
	253	13,189.32[66]	0.8095	79.73°[225]	1.49309	$n_{H\alpha}^{8.03}$[48]	
	250.0	12,958[104]	0.8101	79.24°[225]	1.46694	$n_{H\beta}^{90.35}$[164]	¶
	246.0	12,160[104]	0.8080	78.4°[172]	1.50348	$n_{H\beta}^{30}$[41]	
	240	11,271[230]	0.8081	77.8°[235]	1.5002	$n_{H\beta}^{24.1}$[60]	
	234.5	10,070[104]	0 8096	75°[4]	1.50700	$n_{H\beta}^{20}$[22]	
	227	9,050.13[66]	0.8154	75°[77]	1.5080	$n_{H\beta}^{19.4}$[209]	⊙
	226 0	9,028.8[104]	0.8163	73.05°[225]	1.50967	$n_{H\beta}^{16.35}$[228]	
	220	8,223[230]	0.8136	72.46°[148,149]	1.51130	$n_{H\beta}^{15}$[41]	
	214.4	7,516.4[38,104]	0.8149	71.13°[148,149]	1.51134	$n_{H\beta}^{15}$[218]	
	203.5	6,277.6[104]	0.8158	70.3°[25]	1.5104	$n_{H\beta}^{14.7}$[110]	⊖
	200	5,844[230]	0.8188	70°[223]	1.51047	$n_{H\beta}^{10.7}$[164]	
	194.0	5,304.8[104]	0.8193	70°[69]	1.51528	$n_{H\beta}^{8.5}$[166]	
	186.5	4,651.2[104]	0.8215	70.0°[106]			
	180	4,028[230]	0.8184	69.9°[147]			
	175.5	3,936.8[104]	0.8206	65.3°[235]			
	161.0	2,926.0[104]					

Additional Data

* $\frac{1}{T_b} = 0.004109562 - 0.00051697 \log_{10} p_{mm}$ (16 to 200 mm)

† $\frac{1}{T_b} = 0.004165504 - 0.00054133 \log_{10} p_{mm}$ (200 to 800 mm)

‡ $\frac{1}{T_b} = 0.004216944 - 0.00055902 \log_{10} p_{mm}$ (800 to 4,000 mm)

§ $\frac{1}{T_b} = 0.00433986 - 0.0005907 \log_{10} p_{mm}$ (4,000 to 32,000 mm)

¶ $\frac{dD}{dt} = -0.000938099[1 + 0.00096907(t - 20)]/°C$ (−20 to 135°C)

⊙ $\frac{dD}{dt} = -0.00093744/°C$ (5 to 40°C)

⊖ $\frac{dn}{dt} = -0.00056541/°C$ (5 to 90°C)

The notes designated by letters are given on page 54.

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Toluene	160	2,683 [230]	0.8271	60.2° [25]	1.51697	$n_{H\gamma}^{20}$ [22]	
(Methylbenzene)	155.656	2,347.4 [252]	0.8278	60.1° [147]	1.51970	$n_{H\gamma}^{16.35}$ [228]	
(Continued)	155	2,315 [250]	0.8258	60.04° [148,149]	1.52139	$n_{H\gamma}^{15}$ [218]	
	149.5	2,128.0 [104]			1.5203	$n_{H\gamma}^{14.7}$ [110]	
	150	2,072 [250]	0.8251	60° [4]	1.52523	$n_{H\gamma}^{8.5}$ [166]	
	149.089	2,026.3 [252]	0.8284	60° [223,226]	1.49624	n_{He}^{20} [49]	
	145	1,849 [250]	0.82922	60° [68]	1.49995	n_{He}^{15} [218]	
	143	1,744 [26]	0.8293	60.0° [106]		(h)	
	142.563	1,741.0 [252]	0.8295	60° [218]			
	140	1,718 [230]	0.8296	60° [121]			
	140	1,646 [250]	0.8263	59.2° [145]			
	136	1,491 [26]	0.8288	56.84° [148]			
	136.082	1,489.2 [252]	0.83280	56 40° [131]			
	135	1,459 [250]	0.83367	52.1° [173]			
	129.5	1,276.8 [104]	0.8371	50.2° [147]			
	130	1,269 [26,250]	0.8393	50.13° [225]			
	129.646	1,268.1 [252]	0.8361	50.1° [25]			
	125	1,135 [250]	0.8338	50° [4]			
	123	1,075 [26]	0.8378	50° [223]			
	123.254	1,074.6 [252]	0.8380	50° [69]			
	120	1,052 [230]	0.8382	50° [77]			
	120	992 [250]	0.8393	50.0° [106]			
	120	973 [53,195,196]	0.83915	49.7° [128]			
			0.8380	46.6° [172]			
	116.908	906.1 [252]	0.84250	46.30° [131]			
	117	906 [26]	0.84265	46.10° [131]			
	112.99	813.5 [250]	0.8404	45.12° [148,149]			
	111.0	800 [247]					
	111	800 [26]	0.8430	42.24° [148,149]			
	110.1						
	-110 6	786 [180]	0.8477	40.5° [106]			
	111.69	783.9 [250]	0.84526	40° [68]			
	111.35	774.7 [250]	0.8469	40.00° [225]			
	111.4	774.4 [235]	0.8470	40° [223,226]			
	111 17	770.2 [250]	0.84730	40° [13]			
	110.4		0.8476	40° [121]			
	-110.6	768 [178]	0.8484	36.0° [145]			
	110.2		0.85294	35° [170]			
	-110.6	765 [2]	0.85338	34.50° [131]			
	110.2		0.8520	32.61° [148,149]			
	-110.4	763 [161]					
	110.66	762.4 [250]	0.85263	31.92° [173]			
	110.6	761.2 [172]	0.8563	30.12° [123]			
	110.6	761 [99]	0.8547	30° [170]			
	110.5	760.9 [125]	0 8548	30° [4]			
	110.8	760.5 [156]	0.8563	30° [223]			
	110.2	760.5 [193]	0.8566	30.0° [106]			
	109.2	759.7 [30]	0.8567	30° [69]			
	109.8	759.4 [191]	0.8573	30° [227]			
			0.8576	30° [41]			

The notes designated by letters are given on page 54.

M. P.,°C	B. P.,°C @ 760mm		D^{20}_4		n^{20}_D	Additional Data
Toluene	110.7		0.85770	30°[218]		
(Methylbenzene)	-110.8	759[163]	0.8556	28.74°[148, 149]		
(Continued)	110.51	758.4[250]				
	110.7	758.3[156]	0.85699	28.65°[163]		
	110.2		0.85806	28.4°[199]		
	-110.8	758[57]	0.8571	27.1°[235]		
	110.56(a)	758.0[250]	0.8608	27°[154]		
	110.1	758.0[118]	0.86073	25.3°[7]		
	110.1	758[117]	0.8610	25.13°[10]		
	109.8		0.85956(g)	25°[93]		
	-110 1	758[119]	0.8598	25°[246]		
	110.54	757[250]	0.85986	25°[93]		
	110.35	756.9[250]	0.8599	25°[77]		
	110.37		0.86089	25.0°[248]		
	-110.40	756.6[211]	0.8612	25°[121]		
	110.9	756.5[6]	0.8614	25°[223]		
	110.3		0.861719	25°[204]		
	-110.4	756[179]	0.86216	25°[129]		
	110.34	755.7[250]	0.8622	25°[9,27]		
	110.2	755[13]	0.86221	25°[239]		
	110.0	755[49]	0.86228	25.0°[128]		
	109.6		0.86229	25°[130]		
	-110.0	754[20]	0.8623	25°[222]		
	110.2	753.7[221]	0.8625	25°[202]		
	110	753[80]	0.86288	25°[119]		
	108.8	753[160]	0.8639	D^{25}_{25}[44]		
	109.98	752.6[175]	0.86114	24.15°[163]		
	110.25	751.7[250]	0.86314	22.5°[248]		
	109.43	751.3 ±0.2[186]	0.8652	22°[203]		
	110.4	750.00[8]	0.8627	21.2°[235]		
	109.5		0.8640	21.0°[106]		
	-109.8	750[93]	0.8667	20.9°[42]		
	109.59	750[185]	0.86542	20.4°[110]		
	108.8	750[247]	0.86687	D^{20}_{20}[87]		
	110.15	749.05[250]	0.8669	D^{20}_{20}[80]		
	110.11	749[202]				
	110.3	748[12]	0.8684	D^{20}_{20}[165]		
	110.05	747.7[250]	0.86525	19.75°[163]		
	110.1	746.2[156]	0.8692	19.0°[36]		
	110.1	745.3[156]	0.86616	18.77°[163]		
	109.3	744[93]	0.8653	18.43°[148, 149]		
	108.92	743.7 ±2[186]	0.86747	18.2°[110]		
	109.4	743[34]	0.8657	18°[100]		
	109.3		0.8679	18.0°[48,197]		
	-109.6	742[25]	0.8685	18°[5,94]		
	109.7	741.7[159]	0.86574	17.9°[173]		
	110-110.1	740.9[22]	0.86773	17.5°[248]		
	109.5	740[134]	0.86774	17.5°[248]		
	110	738[155]				

The notes designated by letters are given on page 54.

M. P.,°C	B. P.,°C @ 760mm		D^{20}_4		n^{20}_D	Additional Data
Toluene	109.4		0.8659	17° [232]		
(Methylbenzene)	–109.45	733 [33]	0.8684	16.36° [228]		
(Continued)	109.24	731.9 [250]	0.86919	16.33° [110]		
	109.5		0.86931	16.2° [110]		
	–109.6	731 [158]	0.8675	16.04° [148, 149]		
	109.0					
	–109.1	728 [174]	0.8694	16° [82]		
	106.2	714.34 [188]	0.86983	15.6° [110]		
	107.79	701.2 [250]	0.8714	15.5° [89]		
	107.8	700.00 [8]	0.8720	$D^{15.5}_{15.5}$ [90]		
	106.4	700 [247]	0.8702	15.2° [108]		
	105.26	651.9 [250]				
	105.3	650.00 [8]	0.8682	$D^{15.2}_{15.2}$ [172]		
	103.9	650 [247]	0.8693	15° [55]		
	103.349	633.90 [252]	0.87005	15° [248]		
	103	633.7 [26]	0.8704	15° [223]		
	103.0	608.6 [156]	0.8706	15° [121]		
	102.6	603.7 [156]	0.8712	15° [122]		
	102.5	600.00 [8]	0.8713	15° [114]		
	101.3	600 [247]	0.8715	15° [41]		
	102.17	595.1 [250]	0.87160	15° [218]		
	101.55	586 [31]	0.8723	15° [165]		
	100	571 [53,195, 196]	0.8723	D^{15}_{15} [3]		
			0.8704	14.98° [225]		
	99.4	550.00 [8]	0.87155	14.95° [131]		
	98.5	550 [247]	0.87103	14.3° [110]		
	99.01	540.4 [250]	0.8692	14.13° [148, 149]		
	98.137	525.76 [252]				
	97	525.4 [26]	0.8711	14° [154]		
	96.5	500.00 [8]	0.87131	14° [88]		
	95.5	500 [247]	0.8708	13.1° [190]		
	96.22	496.4 [250]	0.8703	13° [210]		
	93.4	454.1 [156]	0.8723	12.87° [224]		
	93.4	451.3 [156]				
	93.2	450.00 [8]	0.87417	$D^{12.6}_{12.6}$ [161]		
	92.2	450 [247]	0.87228	12.5° [248]		
	93.04	448.8 [250]	0.87278	12.4° [110]		
	91.971	433.6 [252]	0.8722	10.89° [148, 149]		
	90	433 [26]				
	90	416 [195,196]	0.87532	10.7° [164]		
	89.96	406.4 [250]	0.8729	10.17° [148, 149]		
	89.7	400.00 [8]				
	88.6	400 [247]	0.8754	10° [69]		
	86.95	368.35 [250]	0.8762	10° [165]		
	85.849	355.1 [252]	0.87757	8.5° [166]		
	84	354.6 [26]	0.8803	5° [165]		
	85.5	350.00 [8]	0.8812	4° [165]		
	84.6	350 [247]	0.8789	3.59° [148, 149]		
	83.90	332.8 [250]				
	81.5	311.7 [156]				

The notes designated by letters are given on page 54.

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
Toluene	81.2	306.2 [156]	0.8797	2.77° [148,149]		
(Methylbenzene)	80.9	300.00 [8]				
(Continued)	80.1	300 [247]	0.88218	0° [149]		
	80	299 [53,195,196]	0.8822	0.00° [148]		
			0.88108	0° [140]		
	80.73	298.9 [250]	0.88412	0.0° [225]		
	79.772	289.1 [252]	0.88445	0° [219,220]		
	77.67	268.55 [250]	0.88446	0° [43]		
	75	252.5 [196]	0.88448			
	75.9	250.00 [8]	±0.00002	0° [212]		
	75.0	250 [247]	0.88450	0° [16]		
	74.66	241.3 [250]	0.8845	0° [76,176]		
	72.21	220.85 [250]	0.88455	0° [250]		
	70.84	210.25 [250]	0.88456	0° [95]		
	70	210 [196]	0.8847	0° [226]		
	70.18	204.95 [250]	0.8854	0° [27,41]		
	69.69	201.4 [250]	0.88543	0° [43]		
	69.6	200.00 [8]	0.88545	0° [131,218]		
	69.0	200 [247]	0.88547	0.0° [128]		
	63.5	162.2 [156]	0.885482(g)			
	63.3	158.3 [156]	±0.000003	0° [11]		
	62.0	150.00 [8]	0.89618	−11.70° [221]		
	61.5	150 [247]	0.89830	−13.86° [221]		
	60	148 [53,195]	0.90368	−19.60° [221]		
	60	146.8(i) [196]	0.90480	−21.1° [128]		
			0.90665	22.9° [131]		
	61.2	144.8 [156]	0.91170	28.25° [221]		
	51.8	100.00 [8]	0.91825	−35.17° [221]		
	51.8	100 [92]	0.92491	−42.49° [221]		
	51.6	100 [247]	0.92718	−45.2° [131]		
	50	97.5(i) [196]	0.93423	−52.50° [221]		
			0.94393	−62.73° [221]		
	50	93.5 [201]	0.94467	−63.50° [131]		
	46.7	80 [58]	0.95132	−70.38° [221]		
	45.2	75.00 [8]	0.95986	−79.41° [221]		
	45.2	75 [92]	0.96462	−83.6° [131]		
	43.8	70 [58]	0.96928	−89.27° [221]		
	40	64 [53,195]	0.97541	−95.1° [131]		
	40	63.5(i) [196]	1.053	−186° [84]		
			(j)			
	40	60.3 [201]				
	40.6	60 [58]				
	40.3	60 [92]				
	39.9	59 [92]				
	39.5	58 [92]				
	39.1	57 [92]				
	38.7	56 [92]				
	38.3	55 [92]				
	37 9	54 [92]				
	37 5	53 [92]				

The notes designated by letters are given on page 54.

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
Toluene	37	52[92]			
(Methylbenzene)	36.7	51[92]			
(Continued)	36.8	50[58]			
	36.3	50.00[8]			
	36.0	50[247]			
	35.8	49[92]			
	35.4	48[92]			
	34.9	47[92]			
	34.5	46[92]			
	34.0	45.00[8,92]			
	33.5	44[92]			
	33.1	43[92]			
	32.6	42[92]			
	32.1	41[92]			
	31.6	40.00[8]			
	31.6	40[92]			
	30	39.25[196]			
	31.1	39[92]			
	30 5	38[92]			
	30	37.7[201]			
	30	37[92]			
	29.4	36[92]			
	28.8	35.00[8]			
	28.3	35[92]			
	28.3	34[92]			
	27.7	33[92]			
	27.1	32[92]			
	26.4	31[92]			
	25.8	30[74,92]			
	20	24.75(i)[195]			
	20	24.5[53]			
	20	22.0[201]			
	14.8	16.80[8]			
	14.7	16.80[75]			
	14.5	14.56[91]			
	0	6.86(i)[8]			
	−2.75	5.57[116]			
	−3.5	5.36[116]			
	−3.7	5.30[116]			
	−4.35	5.00[116]			
	−4.4	4.98[116]			
	−7.2	4.17[116]			
	−8.7	3.77[116]			
	−9.7	3.53[116]			
	−20.30	1.74[8]			
	−21.0	1.607 (i)[8]			
	−78	0.0058 (i)[8]			

The notes designated by letters are given on page 54.

(a) This boiling point is the average of two determinations.
(b) The boiling point 110.6 is found in references 7, 46, 72, 85, 102, 124, 140, 165, 166, 171, 233.
(c) The boiling point 110.5 is found in references 24, 50, 73, 111, 135, 136, 141, 240.
(d) The boiling point 110 appears frequently in the literature. Most of these references were excluded because the determinations seem to be only approximations.
(e) This refractive index was determined on the vapor.
(f) This temperature is the average of two determinations.
(g) This density is the average of two determinations.
(h) Refractive indices of other lines may be found in references 35, 48, 59, 154, 164, 209.
(i) This pressure is the average of two or more determinations.
(j) Densities at various pressures are found in references 26, 156.

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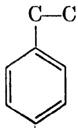
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Ethylbenzene				
-94.91	**136.06**	**0.86707**	**1.49597**	Crit. Temp. (°C)
-92 [20,58]	136-137 [42]	0.8663 [15]	1.4942 [72]	358.9 [32]
-92.4 [60]	136-136.8 [1]	0.8667 [23]	1.4948 [15]	351.05(f) [70]
-93.0 [17,18]	136.5 [14,56,60,66,88,106]	0.86690 [95,107]	1.4950 [111]	346.4 [2]
-93 [30]	136.3-136.5 [33]	0.8672 [68]	1.4951 [9,86,87]	
-93.2 [53]	135.5-136.5 [10]	0.8674 [33,40]	1.4952 [36]	Crit.
-93.9 [94]	135.9-136.3 [61]	0.8678 [29]	1.4955 [104]	Pressure
-94 [96]	136.25 [45]	0.8681 [86,87]	1.4958 [29,33]	(mm Hg)
-94.2 [52]	136.2 [63,101]	0.8682 [104]	1.4959 [5,14,30]	28,978.80 [2]
-94.4 [95,107]	136.19 [26]	0.8684 [4]	1.49593 [68]	28,956.0 [2,103]
-94.7 [19]	136.18 [113]	0.86875(c) [78]	1.49594 [11]	
-94.96 [14]	136.13-136.18 [81]	0.86995 [55]	1.4960 [19,40,66,98,101]	
-95.1 [39]	136.15 [95,107]	0.7611 135.9° [85]	1.49606 [50,99]	$[\alpha]_{5461}$ =
-95.30 [33]	136.15 ± 0.02 [91]	0.7611 135.8° [83,84]	1.49876(d) [100]	-18.7° [47]
	136.10-136.13 [7]		1.4919 25° [20]	
	136.11 ± 0.01 [8]	0.7612 135.8° [83]	1.4928 25° [71]	
	136.1 [68]	0.77016 125.90° [67]	1.4931 25° [41]	
	136.1 ± 0.5 [29]	0.7935 100.9° [13]	1.49317 25° [107]	
	136.0-136.1 [108]	0.79695 97.60° [67]	1.49386 25° [108]	
	136.07 [112]	0 81373 79.70° [67]	1.4940 25° [51]	
	136.0 [20,30]	0.8302 60.2° [13]	1.4949 25° [69]	
	136(a)	0.83138 59.95° [67]	1.4952 21° [61]	
	136 ± 1 [40]	0.83358 59.5° [70]	1.49594 20.2° [16]	
	135.4-136.0 [38]	0.84412 45.50° [67]	1.4952 18° [114]	
	135-136 [23,28,52,53,98]	0.8489 40.0° [13]	1.49621 18° [90]	
	135.9 [102]	0.8615 30° [4]	1.49730 18° [44]	
	135.86 [93]	0.86301 28.2° [89]	1.49790 17.8° [100]	
	135.8 [54,103,104]	0.86085 26.90° [67]	1.49854 16.02° [22]	
	135.5-135.8 [73]	0.8625 25.13° [8,62]	1.4957 16° [97]	
	135.5-135.7 [74]	0.8603 25° [71]	1.49780 16° [43]	
	135.6 [17,64]	0.8616 25° [21,35]	1.49857 15° [95]	
	135.5 [37,74,75]	0.8624 25° [33]	1.49828 14.5° [98]	
	135.11 [100]	0.8629 25° [69]	1.49933 14.5° [100]	
	141.29 871.5 [113]	0.8630 25° [51]	1.4994 14.5° [55]	
	139.44 829.1 [113]	0.8646 D_{25}^{25} [24]	1.49881 14.3° [100]	
	137.43 786.8 [113]		1.4990 14° [49]	
	137.07 777.9 [113]	0.8650 D_{25}^{25} [20,74]	1.50138 10.63° [22]	
	136.92 774.7 [113]		1.50206 8.4° [75]	
	136-137 770 [3]	0.8671 D_{25}^{25} [74]	1.50264 7.0° [99]	
	136.35	0.8639 23.4° [39]	1.49174 $n_{H\alpha}^{20.2}$ [16]	
	-136.45(b) 766.7 [78]	0.8664 22.5° [25]		
	136.15	0.86566 21.0° [70]	1.49058 $n_{H\alpha}^{20}$ [23]	
	-136.27 766.3 [92]	0.8684 D_{20}^{20} [36]	1.49169 $n_{H\alpha}^{20}$ [11]	

The notes designated by letters are given on page 62.

M. P.,°C	B. P.,°C @ 760mm	D^{20}_4	n^{20}_D	Additional Data
Ethylbenzene (*Continued*)	136.5 766[34]	0.8685 D^{20}_{20} [74]	1.49418 $n^{16.12}_{H\alpha}$ [22]	
	135.98 ±0.02 765[19]	0.8705 D^{20}_{20} [74]	1.49408 $n^{15}_{H\alpha}$ [95]	
	136.05 –136.10 764.3[93]	0.87186 17.7° [55]	1.49423 $n^{14.5}_{H\alpha}$ [98]	
	136.37 763.2[113]	0.8722 D^{17}_{17} [97]	1.4948 $n^{14.5}_{H\alpha}$ [55]	
	135–136 763[24]	0.87326 16.0° [55]	1.49694 $n^{10.86}_{H\alpha}$ [22]	
	135.5 –135.8 763[80]	0.87367 15.6° [55]	1.49781 $n^{8.4}_{H\alpha}$ [75]	
	136.24 762.7[113]	0.8722 15° [29]	1.50693 $n^{20.2}_{H\beta}$ [16]	
	136 762[49]	0.87426 15° [67]	1.50565 $n^{20}_{H\beta}$ [23]	
	136.03 761.1[76]	0.8720 D^{15}_{15} [71]	1.50693 $n^{20}_{H\beta}$ [11]	
	136.09 759.0[113]	0.8741 D^{15}_{15} [71]	1.50950 $n^{15}_{H\beta}$ [95]	
	135.7 –135.9 758.5[83]	0.87152 14.85° [67]	1.50953 $n^{14.5}_{H\beta}$ [98]	
	135.5 –135.7 756[39]	0.87452 14.6° [55]	1.5102 $n^{14.5}_{H\beta}$ [55]	
	135.7 –135.9 755.2[65]	0 8708 14.5° [98]	1.51316 $n^{8.4}_{H\beta}$ [75]	
	135.62 750.2[112]	0.87494 14.1° [55]	1.51500 $n^{20}_{H\gamma}$ [23]	
	134.8 –135.2 747[48]	0.8736 14° [49]	1.51637 $n^{20}_{H\gamma}$ [11]	
	135–136 746.5[11]	0.87545 13.5° [55]	1.51904 $n^{14.5}_{H\gamma}$ [98]	
	135.7 –135.95(b) 745.5[46]	0.8759 D^{10}_{10} [74]	1.5196 $n^{14.5}_{H\gamma}$ [55]	
	134.2–135 741[36]	0.8780 D^{10}_{10} [74]	1.52279 $n^{8.4}_{H\gamma}$ [75]	
	135.1 –135.3 740[13]	0.8760 9.9° [83]	1.49477 n^{20}_{He} [23]	
	135.20 739.1[113]	0.87704 8.5° [95]	1.49868 n^{15}_{He} [95]	
	133 5 –134.5 730[114]	0.87697 8.4° [75]	(c)	
	133–134 725[109]	0.8800 D^5_5 [74]		
	134.36 724.4[113]	0.8821 D^5_5 [74]		
	132.24 684.8[113]	0.8809 D^4_4 [74]		
	130.32 648.6[113]	0.8829 D^4_4 [74]		
	127.30 596.5[113]	0.88316 0° [106]		
	124.25 546.6[113]	0.8832 0° [93]		
	121.06 499.3[113]	0.88452 0° [95]		
	118.08 456.8[113]	0.88457 0° [113]		
	115.12 417.45[113]	0.88458 0° [67]		
	112.13 381.0[113]	0.8855 0° [79]		
		0.90464 −22.9° [67]		
		0.92415 −45.2° [67]		
		0.95798 −83.6° [67]		
		0.96809 −95.1° [67]		

Additional Data

* $\frac{1}{T_b} = 0.00388409 - 0.000500 \log_{10} p_{mm}$ (100 to 875 mm)

† $\frac{dD}{dt} = -0.00089175[1 + 0.0003948(t-20)]/°C$ (−95 to 136°C)

‡ $\frac{dn}{dt} = -0.00051701/°C$ (7 to 25°C)

The notes designated by letters are given on page 62.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Ethylbenzene (*Continued*)	109.11 346.9[113]			
	105.98 313.65[113]			
	102.93 284.15[113]			
	99.90 257.15[113]			
	96.86 231.85[113]			
	93.96 209.45[113]			
	90.87 188.05[113]			
	87.80 168.15[113]			
	84.74 150.65[113]			
	81.60 134.3[113]			
	79.52 123.95[113]			
	78.93 121.2[113]			
	25 21[27]			
	30 10[49]			
	−1.38 1.38[59]			
	−11.6 0.56[59]			

(a) The boiling point 136 is found in references 6, 12, 31, 54, 77, 82, 91, 105, 110, 111.
(b) This boiling point is the average of two or more determinations.
(c) This density is the average of two or more determinations.
(d) This refractive index is the average of two or more determinations.
(e) Refractive indices of other lines may be found in reference 22.
(f) This temperature is the average of two or more determinations.

Ethylbenzene References

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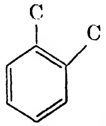
M. P., °C		B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
o-Xylene (1,2-Dimethylbenzene)								
−25.25		**144.18**		**0.88009**		**1.50516**		Crit. Temp. (°C)
−25.0 ± 0.1[44]		144.7[10]		0.87810[21]		1.5040[66]		363[30]
−25.0[12]		144.6[48]		0.8793[24,47]		1.5045[26]		362.95(a)[7]
−25[34]		144.5[9,27,54]		0.8799[38]		1.5049[66]		359.05(a)[46]
−25.10[13]		144.42[16]		0.880024[51]		1.5053[20]		358.3[42]
−25.30[9,20,69]		144.4[20,36,69]		0.88011[44]		1.50538[67]		357.7[25]
−25.3[41]		143.7–144.2[45]		0.88012[44]		1.5054[9]		
−25.34 ± 0.1[57]		143.95–144.15[44]		0.88040[9,69]		1.5055[13,38]		Crit.
−25.5[63]		144.0–144.1[61]		0.8809[20]		1.5057[66]		Pressure
−25.74[49]		144.0[3,17,28,41]		0.8811[23,59]		1.5058[17,72]		(mm Hg)
−27[4,17]		144.0 ± 0.3[65]		0.8812[60]		1.5061[72]		28,066.80[1]
atm		144[23,31]		0.76429	154.90°[39]	1.50301	25°[69]	28,044.0[1,30]
0.00	1,045[12]	143.7[70]		0.78782	126.00°[39]	1.5030	25°[57]	
−5.0	837[12]	143.6[33]		0.80573	106.05°[39]	1.50294	24.5°[8]	
−8.6	692[12]	143.2–143.6[71]		0.82945	79.45°[39]	1.5042	22.3°[11]	
−10.0	633[12]	143.4[15]		0.8461	60.80°[69]	1.50463	21.6°[8,67]	
−15.0	423[12]	142.1–143.1[53]		0.84558	60.47°[39]	1.5060	19°[73]	
−20.0	213[12]	143.0[62]		0.8432	59.4°[46]	1.50491	17.9°[66]	
		143[32]		0.8500	56.5°[30]	1.50712	16.57°[44]	
		142.8–143[19]		0.8582	47.0°[30]	1.50721	16.57°[44]	
		142.6–142.8[40]		0.85765	46.40°[39]	1.50664	16.1°[66]	
		142.6–142.7[29]		0.8661	37.2°[30]	1.50777	15.5°[66]	
		144.4		0.866286	36.34°[51]	1.5070	15°[45]	
		−144.7	769[43]	0.8689	34.47°[59]	1.5082	14.1°[32]	
		144.35	766.2[61]	0.87180	29.70°[39]	1.51086	9.27°[44]	
		144.07		0.872521	28.93°[51]	1.51136	8.5°[54]	
		−144.08	765[13]	0.87445	27°[69]	1.49849	$n_{H\alpha}^{24.5}$ [8]	
		143		0.87464	27.0°[62]	1.5000	$n_{H\alpha}^{22.3}$ [11]	
		−143.5	764[72]	0.8753	26.0°[30]	1.50021	$n_{H\alpha}^{21.6}$ [8]	
		143.9		0.8759	25°[20]	1.50090	$n_{H\alpha}^{17.9}$ [66]	
		−144.2	763[58,59,60]	0.8752	D_{25}^{25} [53]	1.50273	$n_{H\alpha}^{16.54}$ [44]	
		144	763[22]	0.8755	24.5°[8]	1.50268	$n_{H\alpha}^{16.51}$ [44]	
		144.00		0.8758	24.1°[18,65]	1.50248	$n_{H\alpha}^{16.1}$ [66]	
		−144.08	759.1[64]	0.8731	23.85°[46]	1.50368	$n_{H\alpha}^{15.5}$ [66]	
		143.75		0.877938	22.44°[51]	1.5040	$n_{H\alpha}^{14.1}$ [32]	
		−144.02	757.6[64]	0.8784	21.6°[8]	1.50632	$n_{H\alpha}^{9.26}$ [44]	
		142–143	755[72]	0.88019	20.3°[32]	1.50687	$n_{H\alpha}^{8.5}$ [54]	
		142		0.8783	D_{20}^{20} [53]	1.5129	$n_{H\beta}^{24.1}$ [18,55]	
		−143.5	752[28]	0.8808	D_{20}^{20} [26]	1.5159	$n_{H\beta}^{22.3}$ [11]	
		143–144	751.9[8]	0.880776	19.12°[51]	1.51602	$n_{H\beta}^{21.6}$ [8]	
		143.7		0.88192	18.2°[32]			
		−143.9	751.6[37]					
		143.2	750[70]					

The notes designated by letters are given on page 66.

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
o-Xylene	142		0.8798	17.9° [66]	1.51668	$n_{H\beta}^{17.9}$ [66]	*
(1,2-Dimethyl-	-142.5	750 [2]	0.8825	16.1° [66]	1.51846	$n_{H\beta}^{16.1}$ [66]	
benzene)	142.5	748.7 [38]	0.8834	16° [68]	1.51960	$n_{H\beta}^{15.5}$ [66]	
(*Continued*)	142–143	746.8 [8]	0.88381	15.9° [32]	1.5200	$n_{H\beta}^{14.1}$ [32]	
	141.1	737.2 [50]	0.8837	15.5° [66]	1.52291	$n_{H\beta}^{8.5}$ [54]	
	140.6	700 [70]	0.88425	15.00° [39]	1.52406	$n_{H\gamma}^{24.5}$ [8]	
	137.8	650 [70]	0.8845	15° [45]	1.52578	$n_{H\gamma}^{21.6}$ [8]	
	134.8	600 [70]	0.8818	D_{15}^{15} [53]	1.52659	$n_{H\gamma}^{17.9}$ [66]	†
	133.9	597.3 [50]	0.88491	14.5° [32]	1.52839	$n_{H\gamma}^{16.54}$ [44]	
	131.7	550 [70]	0.88524	14.1° [32]	1.52847	$n_{H\gamma}^{16.54}$ [44]	
	128.3	500 [70]	0.88573	13.5° [32]	1.52838	$n_{H\gamma}^{16.1}$ [66]	
	124.6	450 [70]	0.88584	13.3° [32]	1.52958	$n_{H\gamma}^{15.5}$ [66]	
	123.8	445(b) [50]	0.8854	D_{10}^{10} [53]	1.5300	$n_{H\gamma}^{14.1}$ [32]	
	120.6	400 [70]	0.8899	8.5° [54]	1.53221	$n_{H\gamma}^{9.26}$ [44]	
	116.0	350 [70]	0.8895	D_5^5 [53]	1.53301	$n_{H\gamma}^{8.5}$ [54]	‡
	112.9	308.4 [50]	0.8903	D_4^4 [53]	1.50506(d)	n_{He}^{20} [14]	
	112.7	306.7 [50]	0.89679	0° [44]	(e)		
	110.9	300 [70]	0.8968	0° [59]			
	105.1	250 [70]	0.89683	0° [44]			
	98.0	200 [70]	0.89692	0° [39]			
	90.6	150.2 [50]	0.8932	D_0^0 [56]			
	89.3	150 [70]	0.91595	-22.95° [39]			§
	90.4	147.2 [50]	(c)				
	77.6	100 [70]					
	0.6	1.10 [35]					
	-10.7	0.42 [35]					
	-17.0	0.20 [35]					

Additional Data

* $t_m = -25.276_4 + 0.02419\, p_{atm}$ (1 to 1050 atm)

† $\frac{1}{T_b} = 0.003808796 - 0.00049026 \log_{10} p_{mm}$ (100 to 770 mm)

‡ $\frac{dD}{dt} = -0.0008445 95[1 + 0.000703996(t-20)]/°C$ (-23 to 155°C)

§ $\frac{dn}{dt} = -0.00054941/°C$ (8 to 25°C)

(a) This temperature is the average of two or more determinations.
(b) This pressure is the average of two determinations.
(c) Densities at various pressures are found in reference 50.
(d) This refractive index is the average of two determinations
(e) Refractive indices of other lines may be found in references 5, 8, 18, 55.

o-Xylene References

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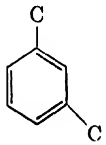
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
m-Xylene (1,3-Dimethylbenzene) 				
−47.87	**139.08**	**0.86415**	**1.49717**	Crit. Temp. (°C)
−45.5[93]	140[110]	0.8616[53]	1.4961[53]	349[11,43]
−47[71]	139–140[1,34]	0.8622[15]	1.4962[116]	348.9[20]
−47.4[56,98]	139.9[62]	0.8634[116]	1.4966[35]	348.4[27]
−47.89[78,111]	139.8[109]	0.86351[59]	1.4970[30,100]	346.35(f)[61]
−48.56[30]	139.7[105]	0.8639[32]	1.4971[11]	345.6[2,57]
−48.9[11]	139.5[12]	0.86401[11]	1.49720[102]	345.5[106]
−49[7,64]	139.2–139.5[68]	0.864053[70]	1.4972[114]	344.8[33]
−50– −49[59]	139.3–139.4[55,112]	0.86412[111]	1.4973[24,100]	
−49.13[111]	139.2–139.4[58]	0.86416[111]	1.4975[109]	Crit. Pressure (mm Hg)
−49.3[12,97]	139.30[98]	0.8650[30]	1.49782[41,102]	27,208.00[2,43]
−50.5[63]	139.3[28,73,74]	0.8653[27]	1.49785[14]	27,170.00[2]
	139.25–139.30[59]	0.8655[10]	1.49788[55]	
	139.2[11,13,39,58,113]	0.8656[81]	1.4980[60]	Crit. Density
	139.15[111]	0.8657[65]	1.4946 25°[78]	0.290[106]
	138.99–139.15[81]	0.8658[31,82]	1.49467 25°[111]	0.294[27]
	139.11[23]	0.8661[109]	1.49468 25°[111]	
	139.1[30,51]	0.8662[4]	1.49566 25°[112]	
	139.00 ± 0.01[97]	0.74561 154.90°[54]	1.4974 20.2°[94]	
	139.0[24,37,48,56,96]	0.75715 139.2°(c)[87,88]	1.4976 19.1°[59]	
	139(a)		1.49830 17.1°[100]	
	138.5–139[72]	0.75685 139.1°[67]	1.4996 15.7°[47]	
	138.9[76,92]	0.7571 139°[89]	1.49962 14.85°[100,102]	
	138.5–138.9[36]	0.7567 $D_0^{138.9}$[76]		
	137.9–138.9[60]	0.77172 126.00°[54]	1.50214 11°[44]	
	138.8[21,91,115]	0.78820 106°[77]	1.50324 8.4°[74]	
	138.75[47]	0.79476 100.00°[54]	1.50477 5.15°[102]	
	138[107,108]	0.79149 98.86°[99]	1.49348 $n_{H\alpha}^{20}$[14]	
	137.5[100]	0.81293 78.86°[99]	1.49518 $n_{H\alpha}^{20}$[10]	
	310 18,012[103]	0.81548 75.92°[99]	1.49429 $n_{H\alpha}^{17.1}$[100]	
	300 15,930[103]	0.82021 71°[77]	1.4954 $n_{H\alpha}^{15.7}$[47]	
	280 12,084[103]	0.8281 64°[42]	1.49548 $n_{H\alpha}^{14.85}$[100]	
	260 8,976[103]	0.8282 64.0°[43]	1.49878 $n_{H\alpha}^{8.4}$[74]	
	240 6,513[103]	0.82860 61.15°[54]	1.5079 $n_{H\beta}^{22.5}$[26,75]	
	220 4,606[103]	0.8297 60.80°[81]	1.5079 $n_{H\beta}^{20.2}$[94]	
	200 3,163[103]	0.8304 59.3°[106]	1.50918 $n_{H\beta}^{20}$[14]	
	180 2,101[103]	0.83030 59.28°[99]	1.51099 $n_{H\beta}^{20}$[10]	
	160 1,344[103]	0.8367 54.0°[43]	1.51007 $n_{H\beta}^{17.1}$[100]	
	140.7 800[115]	0.83689 52°[77]	1.5112 $n_{H\beta}^{15.7}$[47]	
	139.8–140 766.2[90]	0.83797 50.54°[99]		
	140 762.6[106]	0.84140 46.00°[54]		

The notes designated by letters are given on page 71.

M. P.,°C	B. P.,°C @ 760mm		D^{20}_4		n^{20}_D		Additional Data
m-Xylene (1,3-Dimethylbenzene) (*Continued*)	139.4	762[6]	0.8432	44.7°[106]	1.51108	$n^{15}_{H\beta}$[98]	*
	139.1	761.6[67]	0.84373	44°[77]	1.51128	$n^{14.85}_{H\beta}$[100]	
	138.8		0.84484	42.10°[70]	1.51469	$n^{8.4}_{H\beta}$[74]	
	–139.2	761.2[81]	0.8478	41.4°[48]			
	138.8		0.84768	39.37°[99]	1.52066	$n^{20}_{H\gamma}$[10]	
	–139.2	761[80,82]	0.8531	34.47°[61]	1.51997	$n^{17.1}_{H\gamma}$[100]	
	139.2	759.7[89]	0.85427	31.25°[70]	1.5211	$n^{15.7}_{H\gamma}$[47]	†
	139.2	759.2[87]	0.85551	30°[98]	1.52112	$n^{14.85}_{H\gamma}$[100]	
	139	757[85]	0.8581	30°[4]	1.52462	$n^{8.4}_{H\gamma}$[74]	
	138.5	756[44]	0.85611	29.62°[99]			
	138.3		0.85799	28.4°[91]	1.49702	$n^{20}_{H_e}$[19]	
	–139.0	754.5[70]	0.85817	27°[111]	(e)		
	138–139	754[53]	0.85821	27°[111]			
	138.6		0.8605	26.0°[43]			‡
	–138.8	752[22]	0.85958	25.15°[54]			
	138–139	750[35]	0.8600	25°[30]			
	138.3	750[115]	0.8625	D^{25}_{25}[73]			
	137–138	750[3]					
	138.7		0.8627	D^{25}_{25}[22]			
	–139.0	748.3[52]	0.8599	24.9°[61]			§
	137.5		0.8601	24.9°[106]			
	–138	747.5[116]	0.86039	24.15°[70]			
	137.95		0.86216	22.62°[99]			
	–138.10	744.3[95]	0.8641	22.5°[26,75]			
	138.1	739.4[67]	0.86285	21.37°[70]			
	137.9		0.8620	21.1°[16]			¶
	–138.2	735.0[69]	0.86494	20.2°[47]			
	138.5	725[18]	0.8653	D^{20}_{20}[35]			
	137.3						
	–137.6	724[79]	0.8656	D^{20}_{20}[73]			
	136.5		0.8637	$D^{19.5}_{15}$[17]			
	–137	723[40]	0.86505	19°[77]			⊙
	135.7	700[115]	0.86543	18.83°[99]			
	133.0	650[115]	0.8656	18.4°[106]			
	130.1	600[115]	0.86650	18.4°[47]			
	129.2	583.6(b)[67]					

Additional Data

* $\frac{1}{T_b} = 0.00382484 - 0.00048565 \log_{10} p_{mm}$ (100 to 800 mm)

† $\frac{1}{T_b} = 0.00395353 - 0.00052578 \log_{10} p_{mm}$ (800 to 18,012 mm)

‡ $\frac{1}{T_b} = 0.00375932 - 0.00044714 \log_{10} p_{mm}$ (0.90 to 100 mm)

§ $\frac{dD}{dt} = -0.00085791[1 + 0.000542(t - 20)]/°C$ (–52 to 155°C)

¶ $\frac{dD}{dt} = -0.00086094/°C$ (0 to 46°C)

⊙ $\frac{dn}{dt} = -0.00051262/°C$ (5 to 25°C)

The notes designated by letters are given on page 71.

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
***m*-Xylene**	127.0	550[115]	0.8666	17.2°[100]		
(1,3-Dimethyl-	123.6	500[115]	0.8667	17.1°[100]		
benzene)	121.8	458.3[67]	0.8678	17°[104]		
(*Continued*)	120.1	450[115]	0.86818	16.4°[47]		
	120.5	449.2[67]	0.86762	15°[60]		
	116.2	400[115]	0.86835	15°[98]		
	111.7	350[115]	0.86950	15°[60]		
	107.0	300[115]	0.8691	D_{15}^{15}[73]		
	108.7	294.0[67]	0.86848	14.90°[54]		
	108.3	292.7[67]	0.8686	14.85°[100]		
	101.4	250[115]	0.87002	14.2°[47]		
	94.9	200[115]	0.8715	12.3°[87]		
	89.3	152.2[67]	0.8702	12°[65]		
	86.9	150[115]	0.8721	12°[42]		
	88.8	148.2[67]	0.8728	D_{10}^{10}[73]		
	76.3	100[115]	0.87397	8.4°[74]		
	59.7	50[115]	0.8770	D_5^5[73]		
	−2.8	1.37[49]	0.8779	D_4^4[73]		
	−6.75	1.03[49]	0.8796	0°[38]		
	−8.4	0.90[49]	0.88097	0°[77]		
			0.88113	0°[54,98]		
			0.88151	0°[99]		
			0.8823	0°[81]		
			0.8812	D_0^0[76]		
			0.89269	−14°[77]		
			0.90440	−28°[77]		
			0.92148	−48°[77]		
			0.92310	−50°[77]		
			0.92481	−52°[77]		
			0.94876	−70°[77]		
			0.95147	−75°[77]		
			0.9535	−80°[38]		
			1.005	−186°[38,77]		
			(d)			

(a) The boiling point 139 is found in references 5, 29, 31, 45, 46, 50, 57, 86, 101.
(b) This pressure is the average of two determinations.
(c) This density is an average of two determinations.
(d) Densities at various pressures are found in reference 67.
(e) Refractive indices of other lines may be found in references 8, 25, 26, 65, 75, 83, 94, 98.
(f) This temperature is the average of two determinations.

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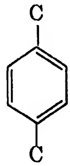
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
***p*-Xylene** (1,4-Dimethylbenzene) 				
13.27	**138.35**	**0.86102**	**1.49583**	Crit. Temp. (°C)
14.5[49,50]	138.9[33]	0.8603[98]	1.4951[27]	348.9[18]
14.3[62]	138.7[10]	0.8604[48]	1.4956[20,28]	348.5[7,40]
14[3,56]	138.5–138.6[22]	0.8609(c)[59]	1.49568(f)[100]	345.3(d)[61]
13–14[30,31]	138.47–138.52[58]	0.860908[73]	1.49573(f)[99]	344.4[2,54]
13.55[57]	138.5[9,38,53,66,75,77,91,103]	0.86094[58]	1.49577[52]	343.6[26]
13.5[35]	138.3–138.5[105]	0.86100[9,97]	1.4958[9,107]	
13.45[88]	138.46[32]	0.8610[63]	1.4959[22]	Crit.
13.4[77,93]	138.40[97]	0.86107[103]	1.4965[108]	Pressure
13.35[14,72,97]	138.4[43,46,52,103]	0.8611[24,25,85,86,91]	1.49680[37]	(mm Hg)
13.30[58]	138.3–138.4[104]	0.8616[52]	1.4968[48]	26,600.00[2,40]
13.25[36]	138.27–138.37[87]	0.73906 155.00°[51]	1.49389 25.4°[8]	26,569.60[2]
13.23 ± 0.05[80]	138.35[19]	0.75305(c) 138.4°[69]	1.4931 25°[80]	
13.21[103]	138–138.2[74]	0.7543 138°[89]	1.49320 25°[103]	
13.2[16,29,85,95]	138.1[106]	0.7558 $D_0^{138.0}$[79]	1.49396 25°[104]	
13.1–13.2[86]	138.0[79,92]	0.76658 125.55°[51]	1.4940 25°[34]	
13.19[9,68]	138(b)	0.78998 100.00°[51]	1.4942 23.4°[13,91]	
13.15[10,67]	137.7[20]	0.80866 79.70°[51]	1.49685 19.9°[37,100]	
13.10[91]	140.1 800[106]	0.8228 64°[39]	1.4958 19.7°[94]	
13.1[53,59,81]	138.4	0.8235 63.0°[40]	1.4968 19.0°[58]	
13.00[22,82]	−138.7 769[55]	0.82527 61.05°[51]	1.49682 17.5°[99]	
13.0[70]	138.37	0.82564 60.60°[51]	1.49747 16.2°[99,100]	
13[12,20]	−138.67 766.4[96]	0.8261 60.60°[85]	1.49860 15°[97]	
atm	138.5 765[23]	0.8350 50.0°[40]	1.4985 14.7°[42]	
99.91 2,855(a)[95]	138.1 761.2[89]	0.83851 46.00°[51]	1.49911 14.4°[77]	
95.00 2,676(a)[95]	138.4 759.2[69]	0.84294 40.65°[73]	1.50315 6.5°[100]	
89.98 2,478(a)[95]	137.6 754.3[90]	0.8444 40°[85]	1.48949 $n_{H\alpha}^{25.4}$[8]	
85.00 2,308(a)[95]	137.8	0.84767 35.20°[5]	1.4898 $n_{H\alpha}^{23.4}$[13]	
79.85 2,110(a)[95]	−138.1 754[83]	0.8489 34.75°[85]	1.49273 $n_{H\alpha}^{17.5}$[99]	
74.90 1,918(a)[95]	138.0	0.84939 33.30°[73]	1.49346(f) $n_{H\alpha}^{16.2}$[99]	
69.92 1,744(a)[95]	−138.2 752.2[47]	0.84943 33.3°[97]	1.49420 $n_{H\alpha}^{15}$[97]	
64.98 1,584(a)[95]	137.5 750[106]	0.85121 31.00°[5]	1.4943 $n_{H\alpha}^{14.7}$[42]	
60.00 1,423(a)[95]	136	0.85230 30°[97]	1.49462 $n_{H\alpha}^{14.4}$[77]	
54.96 1,253(a)[95]	−136.5 750[34]	0.85316 29.01°[5]	1.5058 $n_{H\beta}^{23.7}$[21,78]	
49.95 1,103(a)[95]	137.5	0.85498 27°[103]	1.5055 $n_{H\beta}^{23.4}$[13]	
46.4 968[14]	−138 748[31]	0.85525 27.0°[92]	1.5068 $n_{H\beta}^{19.7}$[94]	
44.90 954(a)[95]	137.1 737.1[69]	0.85448 26.58°[5]	1.50849 $n_{H\beta}^{17.5}$[99]	
45.00 926[14]	137.1	0.85613 25.50°[73]	1.50919 $n_{H\beta}^{16.2}$[99]	
39.93 787[95]	−137.2 730.8[71]	0.85622 25.5°[97]		
40.00 777[14]	134.7 700[106]	0.8564 25.2°[40]		
34.94 634[95]	131.6 650[106]			

The notes designated by letters are given on page 77.

M. P.,°C		B. P.,°C @ 760mm		D^{20}_4		n^{20}_D		Additional Data
***p*-Xylene**		129.6	600.1[69]	0.85652	25.12°[51]	1.51000(f)	$n^{15}_{H\beta}$[97]	*
(1,4-Dimethyl-benzene)		129.6	599.6[69]	0.85665	25.0°[97]	1.5097	$n^{14.7}_{H\beta}$[42]	
		119.2	445.6(a)[69]	0.8574	25°[34]	1.51050	$n^{14.1}_{H\beta}$[77]	
(*Continued*)		107.1	302.6[69]	0.8576	25°[22]	1.51481	$n^{25.1}_{H\gamma}$[8]	
		106.9	295.6[69]	0.8593	D^{25}_{25}[76]	1.51841	$n^{17.5}_{H\gamma}$[99]	
35.00	626[14]	86.9	149.2(a)[69]	0.8595	D^{25}_{25}[1]	1.51905(f)	$n^{16.2}_{H\gamma}$[99]	
30.15	484[14]	0.2	1.16[44]	0.85733	23.37°[5]	1.51285	$n^{15}_{H\gamma}$[97]	†
30.09	480[95]	−2.5	0.87[44]	0.8587	22.90°[85]	1.5200	$n^{14.7}_{H\gamma}$[42]	
30.00	479[14]	−9.5	0.33[44]	0.85925	21.25°[5]	1.52055	$n^{14.4}_{H\gamma}$[77]	
25.18	346[95]			0.86112	20.2°[42]	1.49570(f)	n^{20}_{He}[17]	
25.00	332[14]			0.8616	D^{20}_{20}[27]	1.49860	n^{15}_{He}[97]	
20.13	199[95]			0.8626	D^{20}_{20}[76]	(g)		
20.00	191[14]			0.86058	19.74°[5]			‡
15.00	47[14]			0.86134	19.50°[73]			
				0.86143	19.5°[97]			
				0.8621	19.5°[65]			
				0.86216	19°[42]			
				0.86304	18.1°[42]			
				0.8625	17.5°[99]			
				0.86333	17.23°[5]			§
				0.8627	17.2°[99]			
				0.86343	17.2°[97]			
				0.8636	17.0°[97]			
				0.86388	17°[42]			
				0.8650	D^{17}_{15}[15]			
				0.86412	16.8°[42]			¶
				0.8641(c)	16.2°[99]			
				0.8647	16°[101]			
				0.86542	15.02°[5]			
				0.86535	15.0°[97]			
				0.8656	15°[59]			
				0.8661	D^{15}_{15}[76]			
				0.86544	14.90°[51]			
				0.86590	14.4°[97]			
				0.86619	14.4°[77]			

Additional Data

* $t_m = 13.239 + 0.03570\, p_{atm} - 0.00000191\, p^2_{atm}$ (1 to 2900 atm)

† $\frac{1}{T_b} = 0.00386083 - 0.00049664 \log_{10} p_{mm}$ (100 to 800 mm)

‡ $\frac{dD}{dt} = -0.00086265[1 + 0.000747(t-20)]/°C$ (0 to 135°C)

§ $\frac{dD}{dt} = -0.00087105/°C$ (10 to 50°C)

¶ $\frac{dn}{dt} = -0.00052667/°C$ (6 to 25°C)

The notes designated by letters are given on page 77.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
p-Xylene (1,4-Dimethyl-benzene) (*Continued*)		0.86622 14.3° [42] 0.86751 12.2° [42] 0.8678 12° [39] 0.86865 11.81° [5] 0.8779 0° [85] 0.87848 0° [51] 1.0520 ±0.0016 0° [88] (e)		

(a) This pressure is the average of two or more determinations.
(b) The boiling point 138 is found in references 4, 11, 12, 41, 42, 45, 49, 50, 60, 64, 84.
(c) This density is the average of two determinations.
(d) This temperature is the average of two determinations.
(e) Densities at various pressures are found in reference 69.
(f) This refractive index is the average of two or more determinations.
(g) Refractive indices of other lines may be found in references 6, 8, 21, 78, 94.

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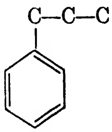
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
n-Propylbenzene							
	159.2		**0.8621**		**1.4919**		Crit. Temp. (°C)
−99.2[162]	158.3–160.3[67]		0.86165(b)[134,142]		1.4919[39,46]		365.6[2]
−101.55(d)[160]	160[5]		0.8617[143]		1.4920[169]		365.5[178]
	159.55 ± 0.05[160]		0.8622[52]		1.4921[52]		
	159 -159.5[121]		0.8628[39,46]		1.4922[142,143]		Crit.
	159.45[162]		0.8638[193]		1.4942	15.7°[86]	Pressure
	159.22[44]		0.7399	158.7°[141]	1.49549	12.25°[169]	(mm Hg)
	159[68,85,109,122,166]		0.7399	158.5°[139,140]	1.49793	8.3°[122]	24,548.0[2]
	158–159[9,38,169]				1.49928	5.1°[170]	24,532.80[2]
	158.9[88,89]		0.76608	130.00°[103]	1.45321	$n_{H\alpha}^{88.9}$[41]	
	158.7[177]				1.48717	$n_{H\alpha}^{21.4}$[41]	Crit.
	158.6 ± 0.7[39,46]		0.79423	99.55°[103]			Density
	158.5[140,146]		0.8032	88.9°[41]	1.48851	$n_{H\alpha}^{20}$[28]	
	157.5–158.5[138]		0.81482	76.10°[103]	1.4891	$n_{H\alpha}^{15.7}$[86]	0.277[178]
	158.3(a)[178]		0.82642	62.75°[103]	1.49016	$n_{H\alpha}^{15}$[162]	0.283[178]
	158.0[133]		0.84691	38.30°[103]	1.49176	$n_{H\alpha}^{12.25}$[169]	
	158[123,175]		0.8541	30°[143]	1.49388	$n_{H\alpha}^{8.3}$[122]	
	156.0[189]		0.85781	25.6°[145]	1.46645	$n_{H\beta}^{88.9}$[41]	
	158.5	800[189]	0 8574	25°[7]	1.50154	$n_{H\beta}^{21.4}$[41]	
	157.9		0.8602	D_{25}^{25}[42]	1.50289	$n_{H\beta}^{20}$[28]	
	−158.2	765[134]					
	160	763[157]	0.8603	D_{25}^{25}[121]	1.5045	$n_{H\beta}^{15}$[86]	
	158–159	763[42]	0.85966	22.85°[103]	1.50478	$n_{H\beta}^{15}$[162]	
	157.6		0.8605	21.4°[41]	1.50630	$n_{H\beta}^{12.25}$[169]	
	−159	758.1[156]	0.86228	20.1°[86]	1.50850	$n_{H\beta}^{8.3}$[122]	
	158.5	751.6[139]	0.8634	D_{20}^{20}[121]	1.5134	$n_{H\gamma}^{15.7}$[86]	
	158.7	750[141]	0.86363	18 4°[86]	1.51533	$n_{H\gamma}^{12.25}$[169]	
	155.4	750[189]	0.86550	16.1°[86]	1.51769	$n_{H\gamma}^{8.3}$[122]	
	156–158	731[158]	0.86613	15.15°[103]	(c)		
	152.5(e)	700[189]	0.86629	15°[162]			
	149.4(e)	650[189]	0.8666	15°[39,46]			
	146.2(e)	600[189]					
	142.8(e)	550[189]	0.8668	D_{15}^{15}[121]			
	139.1(e)	500[189]					
	135.1(e)	450[189]	0.86711	D_{15}^{15}[122]			
	130.9(e)	400[189]	0.86691	14.4°[86]			
	126.2(e)	350[189]	0.86788	13.2°[86]			
	121.0(e)	300[189]	0.8680	13°[71]			
	115.0(e)	250[189]	0.8681	12.25°[169]			
	107.9(e)	200[189]	0.8705	D_{10}^{10}[121]			
	99.1(e)	150[189]	0.8702	9.8°[139]			
	87.2(e)	100[189]	0.8719	8.3°[122]			
	67.7(e)	50[189]					

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
***n*-Propylbenzene** (*Continued*)	67–68 15 [71]	0.8745 D_5^5 [121]		*
	47–49 11 [143]			
	13.9 1.95 [93]	0.8753 D_4^4 [121]		
	3.6 0.85 [93]	0.87864 0° [103]		
	−0.7 0.58 [93]	0.87919(b) 0° [156]		†
	−6.8 0.35 [93]	0.8792 0° [193]		
		0.89754 −22.9° [103]		
		0.91584 −45.2° [103]		
		0.94830 −83.6° [103]		‡
		0.95737 −95.1° [103]		

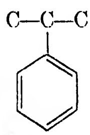
$$* \frac{dD}{dt} = -0.0008292[1+0.000879(t-20)]/°C \qquad (-23 \text{ to } 159°C)$$

$$\dagger \frac{dD}{dt} = -0.0008349/°C \qquad (0 \text{ to } 40°C)$$

$$\ddagger \frac{dn}{dt} = -0.0004956/°C \qquad (5 \text{ to } 25°C)$$

(a) This boiling point is the average of two determinations.
(b) This density is the average of two determinations.
(c) Refractive indices of other lines may be found in reference 162.
(d) This melting point probably refers to the metastable form.
(e) Since 189 is the only reference giving boiling points between 50 and 700 mm, these values were not used in obtaining a boiling-point-pressure equation. The data on other compounds indicates that all boiling points measured at these pressures are too low in this reference.

Isopropylbenzene
(Cumene)



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
−96.1	**152.4**	**0.8623**	**1.4915**	Crit. Temp. (°C)
−95.2(a) [165]	152.6–153.8 [67]	0.8619 [164]	1.4911 [165]	362.7 [2]
−96.25 [187]	152.2–153.7 [121]	0.8620 [134,165]	1.4912 [155,164]	347.2 [64]
−96.9 [159,161]	153–153.5 [65]	0.86231 [86]	1.4914 [6]	
−97 [166]	152.5–153.5 [77,147,148]	0.8633 [187]	1.49145(d) [149]	Crit.
	153.4 [40]	0.8635 [130]	1.4915 [137]	Pressure
	152.8–153.4 [169]	0.7424 152° [119]	1.4917 [10]	(mm Hg)
	153.0 [145]	0.79324 100° [125,126]	1.49199 [76,170]	24,472.0 [2]
	153(b)	0.81585 75° [125,126]	1.4922 [57]	
	152.5–153 [92]	0.83756 50° [125,126]	1.4883 26° [97]	
	152–153 [11,12,59,70,129,159]	0.85659 26.9° [145]	1.4879 25° [150]	
		0.85766 25° [148]	1.4883 25° [29]	
	152.50–152.55 [161]	0.8580 25° [29]	1.4885 25° [104,115]	
	152.5 [102]	0.8581 25° [104,115]	1.4947 15.1° [86]	
	151–152.5 [61]	0.85870 25° [125,126]	1.49778 7.9° [122]	
	152.40 [44]	0.8603 D_{25}^{25} [121]	1.49885 5.8° [170]	
	152.4 [98,136,155]	0.86064 22.0° [86]	1.49063 $n_{H\alpha}^{16.8}$ [169]	
	152.38 [187]		1.4900 $n_{H\alpha}^{15.1}$ [86]	
	151.6–152.2 [97]	0.8634 D_{20}^{20} [121]		

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Isopropylbenzene	152.0[15]		0.86397	18.0°[86]	1.49364	$n_{H\alpha}^{7.9}$ [122]	*
(Cumene)	152[29,119,166]		0.86576	17.5°[92]	1.50539	$n_{H\beta}^{16.8}$ [169]	
(Continued)	151–152[43,78]		0.8662	16.8°[169]	1.5044	$n_{H\beta}^{15.1}$ [86]	
	151.5		0.86556(c)	16.1°[86]	1.50826	$n_{H\beta}^{7.9}$ [122]	
	–152.5	770[130]	0.86593	15.6°[86]	1.51466	$n_{H\gamma}^{16.8}$ [169]	
	152.85		0.8660	$D_{15.4}^{15.4}$ [55]	1.5134	$n_{H\gamma}^{15.1}$ [86]	
	–153.15	765[133]	0.8675	15°[182,183]	1.51722	$n_{H\gamma}^{7.9}$ [122]	
	152.6		0.8668	D_{15}^{15} [121]	(e)		
	–152.8	759[134]	0.8705	D_{10}^{10} [121]			
	152.5	759[48]	0.8727	7.9°[122]			
	151.9		0.8745	D_5^5 [121]			
	–152.2	758[57]	0.8753	D_4^4 [121]			
	152.5		0.87798	0°[148]			
	–152.8	751.4[133]	0.8792	0°[182,183]			
	152.5	750.6[6]	0.87976	0°[125,126]			
	151–152	744[164]	0.8791	D_0^0 [77]			
	151	742[150]					
	149.5						
	–151	730[158]					
	149–150	718[176]					
	148.2(f)	650[189]					
	144.9(f)	600[189]					
	141.5(f)	550[189]					
	137.6(f)	500[189]					
	133.6(f)	450[189]					
	129.3(f)	400[189]					
	124.4(f)	350[189]					
	118.9(f)	300[189]					
	112.7(f)	250[189]					
	105.1(f)	200[189]					
	95.9(f)	150[189]					
	83.2(f)	100[189]					
	62.6(f)	50[189]					
	35.5	10[194]					
	13.7	2.25[93]					
	1.3	0.93[93]					
	–8.2	0.43[93]					

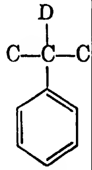
* $\frac{dD}{dt} = -0.0008365[1+0.0006955(t-20)]/°C$ (0 to 100°C)

† $\frac{dn}{dt} = -0.0005186/°C$ (5 to 26°C)

(a) This temperature is recorded as a freezing point in the literature.
(b) The boiling point 153 is found in references 35, 68, 85, 86, 138, 146, 184, 186.
(c) This density is the average of two determinations.
(d) This refractive index is the average of two determinations.
(e) Refractive indices of other lines may be found in reference 50.
(f) Since 189 is the only reference giving boiling point between 50 and 650 mm, these values were not used obtaining a boiling-point-pressure equation. The data on other compounds indicates that all boiling points measured at these pressures are too low in this reference.

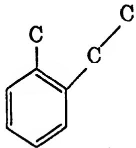
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

2-Deutero-2-phenylpropane
(Isopropylbenzene-d)



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	151-152 [21] 149-151 [18]			$[\alpha]_D^{25}$ = 0.019° [21]

1-Methyl-2-ethylbenzene



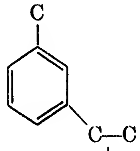
M. P., °C	B. P., °C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
	165.0	**0.8806**		**1.5038**		*
	165.1 [136]	0.8786	24.7° [14]	1.5031(a) [168]		
	165 [68]	0.8841	15.7° [169]	1.50381 [76,170]		
	164.8-165 [169]	0.8884	12.1° [168]	1.50413 [170]		
	164-165 [100]	0.8884	11.5° [168]	1.5042 [169]		
	163 [131]	0.8885	11.4° [168]	1.50198	24.7° [14]	
	162 [168]			1.50611	15.7° [169,170]	
	163.7			1.50656	12.1° [168]	
	-163.9 753 [37]			1.50705	11.4° [168]	
	62-63 20-21 [14]			1.51053	5.5° [170]	
	54-55.5 10 [75]			1.49805	$n_{H\alpha}^{20}$ [37]	
				1.50213	$n_{H\alpha}^{15.7}$ [169]	
				1.50260	$n_{H\alpha}^{12.1}$ [168]	
				1.50301	$n_{H\alpha}^{11.4}$ [168]	
				1.51316	$n_{H\beta}^{20}$ [37]	
				1.51745	$n_{H\beta}^{15.7}$ [169]	
				1.51793	$n_{H\beta}^{12.1}$ [168]	
				1.51834	$n_{H\beta}^{11.4}$ [168]	
				1.52248	$n_{H\gamma}^{20}$ [37]	
				1.52693	$n_{H\gamma}^{15.7}$ †[169]	
				1.52741	$n_{H\gamma}^{12.1}$ [168]	
				1.52789	$n_{H\gamma}^{11.4}$ [168]	
				1.50219	n_{He}^{20} [37]	

* $\frac{dD}{dt} = -0.0009068$/°C (11 to 25°C)

† $\frac{dn}{dt} = -0.0004477$/°C (5 to 25°C)

(a) This refractive index is the average of two or more determinations.

1-Methyl-3-ethylbenzene

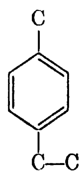


M. P., °C	B. P., °C @ 760mm	D^{20}_4		n^{20}_D		Additional Data
						*
	161.5	**0.8657**		**1.4967**		
	163[83]	0.867[83]		1.49641[170]		
	162.5[68]	0.868	D^{20}_{20} [94]	1.4975[169]		
	161.5–162.5[53,169]	0.8669	19.9°[170]	1.49650	19.8°[170]	
	161.6[136]	0.8690	17.9°[169]	1.49849	17.9°[169]	
	161.5[131]	0.8692	D^{17}_{17} [167]	1.50220	7.0°[170]	
	159.7–160.5[170]	0.871	D^{15}_{15} [53]	1.49229	$n^{20}_{H\alpha}$ [37]	
	160[24]			1.49575	$n^{19.9}_{H\alpha}$ [170]	
	159.2–159.8[37]			1.49279	$n^{19.8}_{H\alpha}$ [170]	†
	159[146,170]			1.49456	$n^{17.9}_{H\alpha}$ [169]	
	158–159[190,191]			1.50734	$n^{20}_{H\beta}$ [37]	
	157–159[167]			1.51102	$n^{19.9}_{H\beta}$ [170]	
	158[8,23]			1.50767	$n^{19.8}_{H\beta}$ [170]	
				1.50973	$n^{17.9}_{H\beta}$ [169]	
				1.51650	$n^{20}_{H\gamma}$ [37]	
				1.52056	$n^{19.9}_{H\gamma}$ [170]	
				1.51678	$n^{19.8}_{H\gamma}$ [170]	
				1.51920	$n^{17.9}_{H\gamma}$ [169]	
				1.49654	n^{20}_{He} [37]	

* $\frac{dD}{dt} = -0.0008621/°C$ (15 to 20°C)

† $\frac{dn}{dt} = -0.0004472/°C$ (7 to 20°C)

1-Methyl-4-ethylbenzene



M. P., °C	B. P., °C @ 760mm	D^{20}_4		n^{20}_D		Additional Data
	162.3	**0.8626**		**1.4952**		
−56[144]	162–163[90]	0.8606[144]		1.4943[169]		
	162.5[72,136]	0.862[80,83]		1.49481[170]		
	161.6-162.5[169A]	0.8626[192]		1.4953[171]		
	162.0[177]	0.863[171]		1.49539[170]		
	162[68,83,107]	0.7393	162°[139]	1.4959[144]		
	161–162(a)	0.7394	162°[139]	1.49595[170]		
	161.5[131]	0.7393	161.8°[141]	1.492505	25°[90]	
	161[170]	0.85740	25°[90]	1.49287	24.4°[171]	
	160–161[49,146]	0.8597	22.8°[169]	1.49303	22.8°[169]	
	160.5[170]	0.8601	22.3°[169]	1.4951	21°[192]	

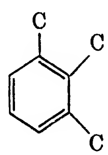
M. P., °C	B. P., °C @ 760mm		D^{20}_4		n^{20}_D		Additional Data
1-Methyl-4-ethylbenzene (*Continued*)			0.862	22° [179,180]	1.4962	16° [167]	*
			0.863	D^{20}_{20} [94]	1.49775	15.9° [170]	
					1.49750	15.2° [170,171]	
	160 [170]		0.8620	$D^{18.5}_{18.5}$ [169A]	1.50088	6.2° [170]	
	159.5		0.8644	17° [90]	1.48921	$n^{22.8}_{H\alpha}$ [169]	
	-160.0	763 [37]	0.8650	16.8° [170]	1.48957	$n^{20}_{H\alpha}$ [37]	
	161.8	761.3 [141]	0.8657	15.9° [170]	1.49068	$n^{20}_{H\alpha}$ [37]	
	161.9		0.8664	15.8° [171]	1.4911	$n^{20}_{H\alpha}$ [171]	
	-162.1	756.3 [139]	0.8667	14.6° [80]	1.49372	$n^{15.9}_{H\alpha}$ [170]	
	162	755 [117,192]	0.8690	14° [72]	1.49325	$n^{15.2}_{H\alpha}$ [171]	
	159-160	750 [37]	0.8685	13.4° [169]	1.49514	$n^{14.6}_{H\alpha}$ [80]	
	49.5-50	11 [144]	0.8687	13.1° [169]	1.49588	$n^{13.4}_{H\alpha}$ [169]	
			0.8694	11.3° [139]	1.50417	$n^{22.8}_{H\beta}$ [169]	
					1.50433	$n^{20}_{H\beta}$ [37]	
					1.50563	$n^{20}_{H\beta}$ [37]	†
					1.50889	$n^{15.9}_{H\beta}$ [170]	
					1.50831	$n^{15.2}_{H\beta}$ [171]	
					1.51017	$n^{14.6}_{H\beta}$ [80]	
					1.51136	$n^{13.4}_{H\beta}$ [169]	
					1.51353	$n^{22.8}_{H\gamma}$ [169]	
					1.51367	$n^{20}_{H\gamma}$ [37]	
					1.51500	$n^{20}_{H\gamma}$ [37]	
					1.51833	$n^{15.9}_{H\gamma}$ [170]	
					1.51779	$n^{15.2}_{H\gamma}$ [171]	
					1.51950	$n^{14.6}_{H\gamma}$ [80]	
					1.52116	$n^{13.4}_{H\gamma}$ [169]	
					1.49388	n^{20}_{He} [37]	
					1.49483	n^{20}_{He} [37]	

$* \frac{dD}{dt} = -0.0008414/°C$ (11 to 25°C)

$† \frac{dn}{dt} = -0.0004592/°C$ (6 to 25°C)

(a) The boiling point 161-162 is found in references 3, 31, 65, 146, 169, 179, 180.

1,2,3-Trimethylbenzene
(Hemellitene)



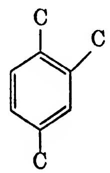
M. P., °C	B. P., °C @ 760mm	D^{20}_4		n^{20}_D		Additional Data
-25.47	**176.1**	**0.8947**		**1.5138**		
-25.4 [91]	177 [83]	0.893 [173]		1.5130 [154]		
-25.47 [99,154]	176.10 [99]	0.8944 [154]		1.5132 [169]		
	176.1 [136]	0.895 [83,169]		1.5110	25° [154]	
	175-176 [36]	0.8951 [99]		1.5116	25° [99]	
	175.5 [131]	0.8866	30° [154]	1.51335	19.55° [169]	
	175-175.5 [62,63,69]	0.8906	25° [154]	1.5160	15° [154]	
	174.7-175.5 [173]	0.8913	22.0° [173]	1.5189	10° [154]	

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,2,3-Trimethylbenzene			0.8949	19.55°[169]	1.5209	5°[154]	*
(Hemellitene)			0.901	15°[69,185]	1.50716	$n_{H\alpha}^{22.0}$ [173]	
(*Continued*)			0.9101	0°[154]	1.50930	$n_{H\alpha}^{19.55}$ [169]	
	175.0-175.3[74]				1.52287	$n_{H\beta}^{22.0}$ [173]	
	175[85,185]				1.52503	$n_{H\beta}^{19.55}$ [169]	
	175.5	744[169]			1.53270	$n_{H\gamma}^{22.0}$ [173]	†
	58	12[132]			1.53483	$n_{H\gamma}^{19.55}$ [169]	
					1.51173	$n_{He}^{22.0}$ [173]	
					1.51208	n_{He}^{20} [36]	
					1.5126	n_{He}^{20} [173]	

* $\frac{dD}{dt} = -0.0008035/°C$ (0 to 30°C)

† $\frac{dn}{dt} = -0.0004648/°C$ (5 to 25°C)

1,2,4-Trimethylbenzene
(Pseudocumene)



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
−44.1	**169.3**		**0.8762**		**1.5049**		Crit. Temp. (°C)
−44.09[99]	170.2 ± 0.3[160]		0.8762[99]		1.5046[169]		381.2[2]
−44.5[56,118]	170[106A,146]		0.87640[12]		1.5048[151]		
−45.00 ± 0.05[153]	169-170[81]		0.8767[4]		1.5051[47,171]		Crit. Pressure (mm Hg)
−45[91]	169.8(a)		0.8465	D_{95}^{95} [121]	1.50512[170]		
	169.75[86]		0.8478	D_{90}^{90} [121]	1.50523[76]		
	169.5[62,85,189]		0.8494	D_{85}^{85} [121]	1.5025	25°[99]	25,232.0[2]
	169.27[133]		0.8510	D_{80}^{80} [121]	1.5032	24°[153]	
	169.2[111,136]		0.8526	D_{75}^{75} [121]	1.50441	21.6°[20]	
	168.7-169.2[169]		0.8544	D_{70}^{70} [121]	1.5045	21°[45]	
	169.18[99]		0.8560	D_{65}^{65} [121]	1.50527	19.9°[76,170]	
	169[68,83,101A,127]		0.8578	D_{60}^{60} [121]	1.50639	17°[28]	
	168.5[131]		0.8598	D_{55}^{55} [121]	1.5072	14.7°[86]	
	168.0-168.5[121]		0.8620	D_{50}^{50} [121]	1.50780	14.1°[171]	
	168.4[64]		0.8643	D_{45}^{45} [121]	1.50780	13.9°[170]	
	168.2[30,89]		0.86025	40°[12]	1.51106	6.8°[170]	
	168.1[30]		0.8667	D_{40}^{40} [121]	1.50001	$n_{H\alpha}^{21.6}$ [20]	
	169.4-169.6	764.8[134]	0.8692	D_{35}^{35} [121]	1.5004	$n_{H\alpha}^{20}$ [171]	
	168.8	750[189]	0.8685	30°[4]	1.50184	$n_{H\alpha}^{17}$ [28]	
	168.0-168.2	742[151]	0.8719	D_{30}^{30} [121]	1.50259	$n_{H\alpha}^{15.3}$ [169]	
	167.8	738.8[153]			1.5030	$n_{H\alpha}^{14.7}$ [86]	
	166.0	700[189]			1.50316	$n_{H\alpha}^{14.1}$ [171]	
	165.9	698.8[153]			1.50625	$n_{H\alpha}^{8}$ [122]	
	163.0	650[189]			1.51745	$n_{H\beta}^{17}$ [28]	
	162.3	636.3[153]			1.51841	$n_{H\beta}^{15.3}$ [169]	
	160.9	612.3[153]					

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4-Trimethylbenzene		0.8747 D_{25}^{25} [121]	1.5184 $n_{H\beta}^{14\ 7}$ [86]	*
(Pseudocumene)		0.8747 21.6° [20]	1.51904 $n_{H\beta}^{11\ 1}$ [171]	
(Continued)		0.8778 D_{20}^{20} [121]	1.52197 $n_{H\beta}^{8}$ [122]	
	159.7 600 [189]	0.8794 15.3° [169]	1.52501 $n_{H\gamma}^{21\ 6}$ [20]	
	158.1 573.3 [153]	0.8810 D_{15}^{15} [121]	1.52816 $n_{H\gamma}^{15\ 3}$ [169]	
	156.3 550 [189]	0.8805 14.1° [171]	1.5282 $n_{H\gamma}^{14\ 7}$ [86]	
	156.2 543.7 [153]	0.8844 D_{10}^{10} [121]	1.52878 $n_{H\gamma}^{14\ 1}$ [171]	
	154.4 516.2 [153]	0.88567 8° [122]	1.53192 $n_{H\gamma}^{8}$ [122]	
	152.6 500 [189]	0.8880 D_5^5 [121]	(b)	
	152.1 483.7 [153]	0.8888 D_4^4 [121]		†
	150.1 458.2 [153]	0.89260 0° [13]		
	147.0 417.2 [153]			
	143.3 373.7 [153]			
	140.1 341.6 [153]			
	134.9 290.6 [153]			
	130.8 255.1 [153]			
	127.7 231.6 [153]			
	122.6 196.6 [153]			
	115.1 152.5 [153]			
	111.1 132 0 [153]			‡
	105.0 106.0 [153]			
	99.6 86.5 [153]			
	98.6 83.0 [153]			
	92.0 63.0 [153]			
	89.1 56.0 [153]			
	74 28 [20]			
	73.1 28.0 [153]			
	68 22 [153]			
	61.6 15.5 [153]			
	55.56 15 [174]			§
	57.6 13 [153]			
	50.5 12 [27]			
	47.1 7 [153]			

* $\frac{1}{T_b} = 0.0035812 - 0.0004585 \log_{10} p_{mm}$ (180 to 765 mm)

† $\frac{1}{T_b} = 0.0034793 - 0.0004118 \log_{10} p_{mm}$ (7 to 175 mm) ¶

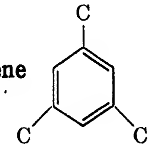
‡ $\frac{dD}{dt} = -0.0008069[1 + 0.0005497(t-20)]/°C$ (0 to 95°C)

§ $\frac{dD}{dt} = -0.0008051/°C$ (0 to 40°C)

¶ $\frac{dn}{dt} = -0.0004704/°C$ (6 to 25°C)

(a) The boiling point 169.8 is found in references 47, 69, 145, 182, 183, 185.
(b) Refractive indices of other lines are found in reference 20.

1,3,5-Trimethylbenzene
(Mesitylene)



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
−44.8	**164.7**		**0.8637**				Crit. Temp. (°C)
−44.78[99]	165[16,73,85]		0.8623[110]		1.49116[19]		370.5[17]
−46.1[64]	164.8–164.9[134]		0.8628[181]		1.4953[171]		370.45(c)[108]
−51.4(d)[32]	164.1–164.9[74]		0.8634[134]		1.4962[181]		367.7[2,51,177]
−51.7(d)[91,99]	164.5–164.8[113,163]		0.8638[4]		1.4967[99,169]		367.6[178]
−52.7(d)[160]	164.2–164.8[114]		0.8642[36,128]		1.4974[151]		
−54– −53(d)[25]	164.72[133]		0.8653[99]		1.4981[82]		Crit. Pressure
−53.5(d)[96]	164.7[111]		0.8667[46]		1.4992[99]		(mm Hg)
−54.4(d)[106]	164.64[99]		0.7372	165°[141]	1.4995[32]		
	164.6[40,87,88,99,136]		0.7372	164.5°[139,140]	1.49961[170]		25,232.0[2]
	164.6 ± 0.2[160]				1.49981[170]		
	164.5–164.6[135]		0.8328	D_{95}^{95}[121]	1.4958	22.5°[26]	
	164.3–164.6[112]		0.8342	D_{90}^{90}[121]	1.4928	21.5°[58]	
	164.5(a)		0.8358	D_{85}^{85}[121]	1.49271	20.6°[172]	
	163.5–164.5[1]		0.8374	D_{80}^{80}[121]	1.4988	19.8°[128]	
	164.4[30]		0.8158	75°[4]	1.4960	19°[50]	
	164.3[178]		0.8392	D_{75}^{75}[121]	1.49541	18°[28]	
	164.0[181]		0.8419	D_{70}^{70}[121]	1.49804	17.05°[169]	
	164.0 ± 0.4[46]		0.8429	D_{65}^{65}[121]	1.4945	17°[66]	
	164[79,84,137,184]		0.8310	60°[4]	1.4966	14.6°[86]	
	164.6–165.5	769[105]	0.8449	D_{60}^{60}[121]	1.50228	14.2°[170,171]	
	165	769[36]	0.8471	D_{55}^{55}[121]	1.50595	6.7°[76,170]	
	163.8–164.8	763[42]	0.8393	50°[4]	1.48832	$n_{H\alpha}^{20.6}$[172]	
	165	762[141]	0.8493	D_{50}^{50}[121]	1.48701	$n_{H\alpha}^{20}$[19]	
	164.5	759.2[139]	0.8516	D_{45}^{45}[121]	1.49127	$n_{H\alpha}^{18}$[28]	
	163	747[95]	0.8476	40°[4]	1.49403	$n_{H\alpha}^{17.05}$[169]	
	164	745[116]	0.8540	D_{40}^{40}[121]	1.4926	$n_{H\alpha}^{14.6}$[86]	
	161.8–162.8	720[34]	0.8565	D_{35}^{35}[121]	1.49774	$n_{H\alpha}^{14.2}$[171]	
	66.4	24.5[124]	0.8557	30°[4]	1.49985	$n_{H\alpha}^{7.6}$[122]	
	66.0	22[151]	0.8592	D_{30}^{30}[121]	1.50341	$n_{H\beta}^{20.6}$[172]	
	66	22[152]	0.855189	29.49°[120]	1.50146	$n_{H\beta}^{20}$[19]	
	10.6	0.91[93]	0.85402	28.6°[145]	1.50611	$n_{H\beta}^{18}$[28]	
	10.2	0.91[93]	0.8614	D_{25}^{25}[42]	1.50936	$n_{H\beta}^{17.05}$[169]	
	3.2	0.53[93]	0.8620	D_{25}^{25}[121]	1.5073	$n_{H\beta}^{14.6}$[86]	
	2.7	0.50[93]			1.51333	$n_{H\beta}^{14.2}$[171]	
	2.3	0.50[93]			1.51521	$n_{H\beta}^{7.6}$[122]	
	1.5	0.43[93]			1.51292	$n_{H\gamma}^{20.6}$[192]	
	−1.7	0.34[93]			1.51033	$n_{H\gamma}^{20}$[19]	
	−1.20	0.33[93]					

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,3,5-Trimethylbenzene (Mesitylene) (*Continued*)			0.8643	21.0° [172]	1.51891	$n_{H\gamma}^{17.05}$ [169]	*
			0.8652	D_{20}^{20} [121]	1.5165	$n_{H\gamma}^{14.6}$ [86]	
			0.8632	19° [50]	1.52311	$n_{H\gamma}^{14.2}$ [171]	
	−2.75	0.29 [93]	0.8646	17.05° [169]	1.52460	$n_{H\gamma}^{7.6}$ [122]	
	−4.2	0.28 [93]	0.8678	D_{15}^{15} [163]	1.49957	$n_{H\alpha}^{20}$ [36]	
			0.8685	D_{15}^{15} [121]		(b)	
			0.8697	14.1° [171]			†
			0.8722	D_{10}^{10} [121]			
			0.87397	7.6° [122]			
			0.8760	D_5^5 [121]			
			0.8768	D_4^4 [121]			

* $\frac{1}{T_b} = 0.0036108 - 0.00046055 \log_{10} p_{mm}$ (720 to 770 mm)

† $\frac{dD}{dt} = -0.0008203[1 + 0.0008738(t-20)]/°C$ (4 to 165°C)

(a) The boiling point 164.5 is found in references 30, 33, 69, 96, 128, 131, 140, 146, 177, 185.
(b) Refractive indices of other lines may be found in reference 50.
(c) This temperature is the average of two determinations.
(d) This melting point probably refers to the metastable form of the compound.

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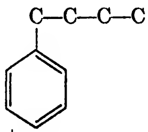
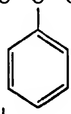
n-Butylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	183.3		**0.8604₅**				*
−81.2[210]	183.1–183.5[86]		0.8608[80]		1.4880[56,64]		
−88.5[86,158,209]	183.46 ± 0.01[15]		0.8612[218]		1.4899[181,182]		
	183.3[65]		0.8613[136,181,182]		1.4900[80]		
	183.10[210]		0.862[65]		1.4914[65]		
	182.1–183.1[56,64]		0.8668[56,61]		1.4936[218]		
	183[1,38,143,176]		0.72466	181.30°[147]	1.4895	21.8°[159]	
	181–182[205]				1.4942	17.5°[26]	
	180–181[218]		0.74557	156.70°[147]	1.49210	15°[210]	
	180[107,123,129,165]				1.494	13.5°[107]	
	179.5		0.76869	129.80°[147]	1.4907	13°[1]	
	−180.5	748[13,26]			1.48815	$n_{H\alpha}^{15}$[210]	
	178–179	735[159]	0.79445	99.55°[147]	1.50190	$n_{H\beta}^{15}$[210]	
	79	23[80]	0.81392	76.15°[147]	1.51030	$n_{H\gamma}^{15}$[210]	
	72–75	21[200]	0.82673	61.55°[147]	1.49254	$n_{H\epsilon}^{15}$[210]	
	91.5–93.0	12[159]	0.83901	45.95°[147]			
	66–68	12[182]	0.84527	38.30°[147]			
	12.2	0.48[134]	0.85245	30°[210]			
	5.5	0.25[134]	0.8535	30°[182]			
	−4.7	0.10[134]	0.8561	25.13°[15,138]			
			0.8561	25°[14]			
			0.85760	22.85°[147]			
			0.862	D_{20}^{20}[135]			
			0.8620	D_0^{20}[110A]			
			0.86202	D_0^{20}[111]			
			0.8622	16°[165]			
			0.86391	15.15°[147]			
			0.86475	15°[210]			
			0.87608	0°[147]			
			0.87695	0°[210]			
			0.8761	D_0^0[110A,111]			
			0.89440	−22.9°[147]			
			0.91210	−45.2°[147]			
			0.94226	−83.6°[147]			
			0.95132	−95.1°[147]			

* $\frac{dD}{dt} = -0.00081118[1 + 0.0004963(t-20)]/°C$ (−95 to 182°C)

† $\frac{dD}{dt} = -0.0008130/°C$ (0 to 40°C)

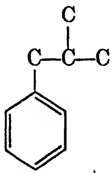
M. P.,°C	B. P.,°C @ 760mm	D^{20}_4	n^{20}_D	Additional Data
2-Phenylbutane (*sec*-Butylbenzene)	C—C—C—C 			
	172.5	**0.8608**	**1.4898**	
−82.7[208]	173–174.5[25]	0.8606[55]	1.4885[33]	$[\alpha]^{30}_D$ =
	174[159]	0.86205(c)[80]	1.4900[80,85,213]	+1.36°(a)[132]
	173–174[85,106,202]	0.8624[213]	1.4902[88]	$[\alpha]^{24}_D$ =
	172.3–173.3[26]	0.8639(a)[78]	1.4863 25°[202]	+1.18°(a)[131]
	173[22]	0.8364 50°[55]	1.4870(b) 25°[132]	$[\alpha]^{22}_D$ =
	172–173[105]	0.8404 45°[55]	1.4878(a) 25°[132]	+0.055°[33]
	172.5[208]	0.8443 40°[55]	1.4880 25°[148]	$[\alpha]^{22}_D$ =
	172(a)[78]	0.8483 35°[55]	1.4894 21°[106]	+0.03°[33]
	170–172[28]	0.8563 30°[55]	1.4895 20.8°[159]	$[\alpha]^{24}_D$ =
	171[148]	0.8577 25°[148]	1.49165 16°[26]	−1.92°(a)[130]
	170–172 744[213]	0.8634 21°[106]		$[\alpha]^{24}_D$ =
	173.2	0.8615 18°[26]		−2.13°(b)[133]
	−174.2 742.4[55]	0.8646 15°[55]		$[\alpha]^{23}_D$ =
	75–76(b) 24[132]	0.8669 15°[186]		−2.30°(b)[132]
	71–74(a) 20[132]	0.8687 10°[55]		
	69 20[80]	0.8725 5°[55]		
	68(b) 20[130,132,133]	0.8763 0°[55]		
	65–67 20[33]			
	61–62 16[33]			
	63(a) 15[131]			
	60.2–60.4 15[159]			
	9.8 0.53[134]			
	2.6 0.32[134]			
	−3.0 0.18[134]			
	−8.6 0.10[134]			

* $\frac{dD}{dt} = -0.0007947[1+0.002322(t-20)]/°C$ (0 to 50°C)

† $\frac{dn}{dt} = -0.0004846/°C$ (16 to 25°C)

(a) This constant was determined on the *dextro*rotatory form.
(b) This constant was determined on the *levo*rotatory form.
(c) This density is the average of two determinations.

1-Phenyl-2-methylpropane
(Isobutylbenzene)

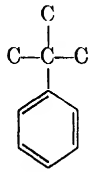


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	170.1		**0.8673**		**1.4928**		Crit. Temp. (°C)
	171 [123,146,166]		0.8628 [237]		1.4871 [80]		377.1 [5]
	170 [176]		0.86726 [124]		1.49338	18.5° [25]	
	169–169.5 [160,161]		0.8650	D_{25}^{25} [160]	1.4957	14.5° [124,146]	Crit. Pressure (mm Hg)
	169.2 [234]		0.86440	23.6° [184]	1.49851	7.9° [161]	23,636.0 [5]
	168 [139]		0.8680	D_{20}^{20} [160]	1.4916	$n_{H\alpha}^{14.5}$ [124]	
	167–168 [41]		0.86874	18.2° [124]	1.49459	$n_{H\alpha}^{7.9}$ [161]	
	167.5 [165]		0.87036	16.1° [124]	1.5056	$n_{H\beta}^{14.5}$ [124]	
	167.0 [124,184]		0.8714	D_{15}^{15} [160]	1.50858	$n_{H\beta}^{7.9}$ [161]	
	167 [119,235]		0.87181	14.3° [124]	1.5141	$n_{H\gamma}^{14.5}$ [124]	
	169.2	800 [235]	0.87195	14.1° [124]	1.51772	$n_{H\gamma}^{7.9}$ [161]	
	170	756 [236]	0.87243	13.5° [124]			
	168–171	755 [190A]	0.8748	D_{10}^{10} [160]			
	166.8	750(a) [235]	0.87620	7.9° [161]			
	164.2	700(a) [235]	0.8790	D_5^5 [160]			
	161.3	650(a) [235]	0.8796	D_4^4 [160]			
	158.3	600(a) [235]					
	155.1	550(a) [235]					
	151.6	500(a) [235]					
	147.6	450(a) [235]					
	143.4	400(a) [235]					
	138.6	350(a) [235]					
	133.4	300(a) [235]					
	127.1	250(a) [235]					
	120.0	200(a) [235]					
	110.9	150(a) [235]					
	98.7	100(a) [235]					
	79.0	50(a) [235]					
	59.5	12 [80]					

* $\frac{dD}{dt} = -0.0007641/°C$ (4 to 25°C)

† $\frac{dn}{dt} = -0.0004783/°C$ (7 to 20°C)

(a) Since 235 is the only reference giving boiling points at pressures of 50 mm to 750 mm, these values were not used to obtain a boiling point-pressure equation. Data on other compounds indicate that the boiling points given at these pressures in this reference are too low.



tert-Butylbenzene
(2-Phenyl-2-methylpropane)

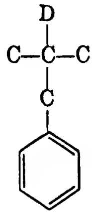
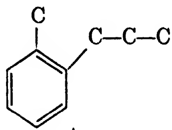
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
							*
−58.1	**169.0**		**0.8669**				
−58 [65,209]	168.5–170 [88]		0.8660 [213]		1.4908 [190]		
−58.1 [87,140,158]	169.5 [11]		0.8664 [34]		1.4912 [88]		
−60.9 [207]	169.3–169.5 [159]		0.8665 [81]		1.4918 [213]		
	168.5–169.5 [156]		0.867 [119]		1.4919 [81]		
	169.3 ± 0.3 [207]		0.8671 [71,168]		1.4921 [189]		
	169 [71,119]		0.8673 [71]		1.49235(a) [231]		
	168.7 [65,140]		0.86733 [128]		1.4929 [12]		
	168.5 [28]		0.8077	90.7° [34]	1.4930 [71]		
	170.0	772 [12]	0.8204	75.6° [34]	1.49609 [163]		
	168.6		0.8273	67.5° [34]	1.4963 [17]		
	−168.7	759.0 [168]	0.8403	51.9° [34]	1.4969 [65,140]		
	168.5		0.8490	41.4° [34]	1.4970 [85]		
	−168.8	758 [87]	0.8570	31.5° [34]	1.4905	25° [40,148]	
	168.8		0.8623	25° [40,148]	1.4958	24° [199]	
	−169	757.7 [34]	0.8636	23.3° [87]	1.4942	23° [198]	
	168.8		0.8690	$D_{15}^{19.5}$ [46]	1.4920	20.8° [159]	
	−169.0	751.4 [167]	0.8716	15° [186]	1.4924	20.4° [231]	
	167		0.8718	15° [186]	1.49668	18.5° [25]	
	−167.5	736 [186]	0.8752	9.4° [34]	1.49724	18.5° [25]	
	103	108 [231]	0.8828	0° [34]			
	84.2	50 [231]					
	58–58.2	16 [159]					
	13.7	1.08 [134]					
	10.8	0.82 [134]					
	2.3	0.43 [134]					
	−2.0	0.27 [134]					

* $\frac{1}{T_b} = 0.00361049 - 0.0004682 \log_{10} p_{mm}$ (100 to 772 mm)

† $\frac{dD}{dt} = -0.0008187[1 + 0.0007479(t-20)]/°C$ (0 to 91°C)

‡ $\frac{dD}{dt} = -0.0008148/°C$ (0 to 32°C)

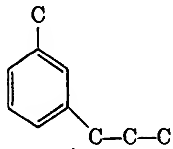
(a) This refractive index is the average of two or more determinations.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
2-Deutero-2-benzylpropane (Benzyldimethylmethane-d) 						
	170.5–171.5 [30]					
1-Methyl-2-*n*-propylbenzene 						
		0.8742		**1.4993**		
	184 [214]	0.874 [53,214]		1.49931 [110,216]		
	180–182 [100]	0.8748 [100]		1.4995 [214]		
	180.5–181.5 [53]	0.8752 [53]		1.4999	19° [117]	
	65–68 14 [117]	0.8747	19° [117]	1.50139	15.75° [214]	
		0.8770	15.75° [214]	1.5032	13° [117]	
		0.8891	0° [100]	1.50594	5.7° [216]	
				1.49476	$n_{H\alpha}^{20}$ [53]	
				1.49532	$n_{H\alpha}^{20}$ [53]	
				1.49765	$n_{H\alpha}^{15.75}$ [214]	
				1.50915	$n_{H\beta}^{20}$ [53]	
				1.50980	$n_{H\beta}^{20}$ [53]	
				1.51218	$n_{H\beta}^{15.75}$ [214]	
				1.51791	$n_{H\gamma}^{20}$ [53]	
				1.51857	$n_{H\gamma}^{20}$ [53]	
				1.52125	$n_{H\gamma}^{15.75}$ [214]	
				1.49909	$n_{H\epsilon}^{20}$ [53]	
				1.49976	$n_{H\epsilon}^{20}$ [53]	

* $\frac{dD}{dt} = -0.00073985/°C$ (0 to 20°C)

† $\frac{dn}{dt} = -0.0004630/°C$ (5 to 20°C)

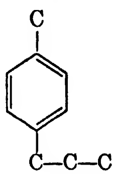
1-Methyl-3-*n*-propylbenzene



M. P., °C	B. P., °C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
	179.4		**1.4937**	*
	181.5–182.5 [214]	0.8601 [216]	1.49230 [216]	
	180 [216]	0.862 [214]	1.49321 [216]	
	176–179 [239]	0.8625 [53]	1.49510 [110,216]	
	177–178.5 [216]	0.864 D^{20}_{20} [135]	1.4951 [214]	
	176–178 [75]	0.8646 17.6° [216]	1.49340 17.6° [216]	
	176.5–177.5 [53]		1.49640 17.0° [214]	
	178–180 757 [66]	0.8651 D^{17}_{17} [239]	1.4945 16° [239]	
		0.8648 17.0° [214]	1.50185 5.2° [216]	
		0.865 D^{15}_{15} [75]	1.48978 $n^{20}_{H\alpha}$ [216]	
			1.48981 $n^{20}_{H\alpha}$ [53]	
			1.48968 $n^{17.6}_{H\alpha}$ [216]	
			1.49262 $n^{17.0}_{H\alpha}$ [214]	
			1.50392 $n^{20}_{H\beta}$ [216]	
			1.50433 $n^{20}_{H\beta}$ [53]	
			1.5038 $n^{17.6}_{H\beta}$ [216]	
			1.50738 $n^{17.0}_{H\beta}$ [214]	
			1.51320 $n^{20}_{H\gamma}$ [53]	
			1.51646 $n^{17.0}_{H\gamma}$ [214]	
			1.49398 n^{20}_{He} [53]	

* $\frac{dn}{dt} = -0.0005484/°C$ (5 to 20°C)

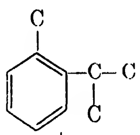
1-Methyl-4-*n*-propylbenzene



M. P., °C	B. P., °C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
	183.2	**0.8588**	**1.4944**	
−62 [183]	182–185 [239]	0.8570 [53]	1.49228 [216]	
	183–184 [50,89,136]	0.858 [216]	1.4924 [50]	
	183 [216]	0.8591 [50,183]	1.49246 [216]	
	182–183 [214]	0.860 [216]	1.4930 [183]	
	182.5 [216]	0.858 D^{25}_{25} [89]	1.49485 [216]	
	182 [216]	0.8554 23.7° [216]	1.4954 [214]	
	181.0–181.4 [216]		1.49542 [110,216]	
	179.5–180.0 [53]	0.861 D^{20}_{20} [135]	1.49588 [216]	
	183–184 774 [232]	0.8617 18.8° [216]	1.49602 [216]	

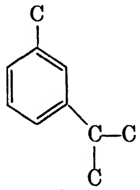
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Methyl-4-*n*-propylbenzene (*Continued*)			0.8620	18.8° [216]	1.49065	23.7° [216]	
			0.8642	15.4° [214]	1.49180	21.5° [216]	
					1.49641	18.8° [216]	
	66	11 [183]			1.49655	18.8° [216]	
					1.4943	16° [239]	
					1.49749	15.4° [216]	
					1.50200	5.1° [216]	
					1.48706	$n_{H\alpha}^{23.7}$ [216]	
					1.48781	$n_{H\alpha}^{20}$ [53]	
					1.49269	$n_{H\alpha}^{18.8}$ [216]	
					1.49278	$n_{H\alpha}^{18.8}$ [216]	
					1.49371	$n_{H\alpha}^{15.4}$ [214]	
					1.50119	$n_{H\beta}^{23.7}$ [216]	
					1.50213	$n_{H\beta}^{20}$ [53]	
					1.50752	$n_{H\beta}^{18.8}$ [216]	
					1.50765	$n_{H\beta}^{18.8}$ [216]	
					1.50863	$n_{H\beta}^{15.4}$ [214]	
					1.51111	$n_{H\gamma}^{20}$ [53]	
$*\frac{dD}{dt} = -0.0009731/°C$	(15 to 24°C)				1.51687	$n_{H\gamma}^{18.8}$ [216]	
					1.51804	$n_{H\gamma}^{15.4}$ [214]	
$\dagger\frac{dn}{dt} = -0.0005733/°C$	(5 to 25°C)				1.49197	n_{He}^{20} [53]	

1-Methyl-2-isopropylbenzene
(*o*-Cymene)



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	175.1		**0.8752**				
−25.5 [153]	175–176 [214]		0.8741 [53]		1.5003 [214]		
	174.5–175.5 [53]		0.8754 [44]		1.501	22° [177,178]	
	175 [53,153,177,178,214]		0.876 [214]		1.5022	19° [44]	
	176.6	754 [44]	0.8740	D_0^{22} [177,178]	1.50206	16.15° [214]	
			0.8789	16.15° [214]	1.49428	$n_{H\alpha}^{20}$ [53]	
			0.879	$D_{15.6}^{15.6}$ [153]	1.49513	$n_{H\alpha}^{20}$ [53]	
			0.8902	D_0^0 [177,178]	1.49826	$n_{H\alpha}^{16.15}$ [214]	
					1.50858	$n_{H\beta}^{20}$ [53]	
					1.50942	$n_{H\beta}^{20}$ [53]	
					1.51290	$n_{H\beta}^{16.15}$ [214]	
					1.51746	$n_{H\gamma}^{20}$ [53]	
					1.51838	$n_{H\gamma}^{20}$ [53]	
					1.52185	$n_{H\gamma}^{16.15}$ [214]	
					1.49862	n_{He}^{20} [53]	
$*\frac{dD}{dt} = -0.0007470/°C$	(0 to 22°C)				1.49957	n_{He}^{20} [53]	

1-Methyl-3-isopropylbenzene
(*m*-Cymene)

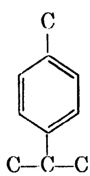


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
	175.6	**0.8614**		**1.4922_5**		
−25[153]	173–177[102]	0.860[119,214]		1.4920[169]		
	176–176.5[36]	0.8606[169]		1.49216[121]		
	176[9]	0.8619[53]		1.49222[227]		
	175–176[79,227]	0.862[206,227]		1.4925[214]		
	174–176[206]	0.8631[53]		1.49385	17.05°[214]	
	175.6–175.8[169]	0.8584	26.5°[102]	1.4968	10°[169]	
	175.7[153]	0.8590	D_0^{22}[177,178]	1.4881	$n_{H\alpha}^{20}$[121]	
	174.5–175.5[53]	0.865	D_{20}^{20}[135]	1.48915	$n_{H\alpha}^{20}$[53]	
	175[119,123,214]	0.8626	D_{20}^{20}[121]	1.48934	$n_{H\alpha}^{20}$[53]	
	174–175[177,178]	0.8628	17.05°[214]	1.4885	$n_{H\alpha}^{19.6}$[169]	
	174.7–175.7 758.6[121]	0.8763	D_0^0[121]	1.49016	$n_{H\alpha}^{17.05}$[214]	
	173 750[66]			1.50213	$n_{H\beta}^{20}$[121]	
	66.5 17.6[169]			1.50356	$n_{H\beta}^{20}$[53]	
				1.50366	$n_{H\beta}^{20}$[53]	
				1.5028	$n_{H\beta}^{19.6}$[169]	
				1.50452	$n_{H\beta}^{17.05}$[214]	
				1.51100	$n_{H\gamma}^{20}$[121]	
				1.51263	$n_{H\gamma}^{20}$[53]	
				1.51336	$n_{H\gamma}^{17.05}$[214]	
				1.49340	n_{He}^{20}[53]	
				1.49369	n_{He}^{20}[53]	

$* \frac{dD}{dt} = -0.00072560/°C$ (0 to 27°C)

$† \frac{dn}{dt} = -0.00049025/°C$ (10 to 20°C)

1-Methyl-4-isopropylbenzene
(*p*-Cymene)



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
−69.8	**176.9**	**0.8571**	**1.4903**	Crit. Temp. (°C)
−68.9[86,158]	178[188]	0.85618[76]	1.4872[43]	394.7(e)[151]
−72.3[169]	177.0–177.5[160]	0.85688(c)[101]	1.4887[85]	
−73.0[153]	177–177.5[128]	0.8570[169]	1.48894[110]	
−73.25[207]	176.5–177.5[32]	0.8573[152]	1.48935[225]	

1-Methyl-4-isopropylbenzene
(*p*-Cymene)
(*Continued*)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8575 [53,142]		1.4894(d) [214]		
			0.8580 [53]		1.4902 [144]		
			0.8581 [164]		1.4904 [169]		
			0.8582 [228]		1.49060 [101]		
−73.5 [70]	177.3–177.4 [35,169]		0.7248	175.4° [180]	1.4906 [228]		
−73.5(a) [122]	176.6–177.4 [82]		0.79963	90° [29]	1.49083 [120]		
−74 [65]	177.3 [142]		0.81624	70° [29]	1.48878	25° [128]	
	177.1–177.2 [27]		0.82439	60° [128]	1.4877	24.5° [65]	
	176.2–177.2 [120]		0.8235	59.45° [151]	1.48942	24.1° [216]	
	177.1 ± 0.25 [207]		0.83205	50° [128]	1.4868	21° [238]	
	177 0 [65]		0.83588	45° [128]	1.48895	21° [77]	
	177 [88]		0.83656	45° [29]	1.4893	21° [103]	
	176.7–177.0 [86]		0.83970	40° [128]	1.48885	20.2° [110]	
	176.6–177 [164]		0.85266	25° [29]	1.4920	18° [27]	
	176–177 [70,85,214]		0.85341	25° [128]	1.49271	16.1° [115]	
	176.7 [125,126,127]		0.8558	D_{25}^{25} [160]	1.49474	15.0° [214,216]	
	176.6 [228]		0.8552	21° [238]	1.4930	15° [48]	
	176.5 [69,103]		0.8574	D_{21}^{21} [103]	1.49159	14.0° [214,216]	
	176–176.5 [280]		0.8583	D_{20}^{20} [120]	1.49325	13.4° [214,216]	
	175.5–176.5 [58]		0.8586	D_{20}^{20} [160]	1.49419	11.0° [214]	
	176.0 [153]		0.8597	D_{20}^{20} [238A]	1.49664	7.9° [161]	
	175–176 [23,77,214,225]		0.85875	18° [128]	1.49752	5.9° [216]	
	175.5 [177,178]		0.8593	18° [27]	1.45130	$n_{H\alpha}^{91.2}$ [51]	
	175 [51,54,123,149A]		0.8584	17° [220]	1.45849	$n_{H\alpha}^{77}$ [51]	
	174.3–175 [101]		0.8590	17° [47]	1.47303	$n_{H\alpha}^{47.0}$ [51]	
	177.0–177.4	768 [149]	0.8598	17° [27]	1.48541	$n_{H\alpha}^{20.0}$ [51]	
	176.0–176.5	762 [53]	0.8576	16.4° [214]	1.4865	$n_{H\alpha}^{20}$ [169]	
	175.4–175.5	749.5 [180]	0.8605	16.1° [115]	1.48664	$n_{H\alpha}^{20.0}$ [101]	
	174.5–175	748 [238]	0.8601	15° [226]	1.48676	$n_{H\alpha}^{20}$ [120]	
	174.6	747 [144]	0.8606	15° [27]	1.48784(d)	$n_{H\alpha}^{20}$ [53]	
	175.5	744 [104]	0.8608	15° [225]	1.48635	$n_{H\alpha}^{16.4}$ [214]	
	175.4	743.7 [112]	0.8615	15° [23]	1.4884	$n_{H\alpha}^{16.1}$ [115]	
	175–176	743 [226]	0.8615	D_{15}^{15} [103]	1.49105	$n_{H\alpha}^{15.0}$ [214]	
	175–176	735.5(b) [18]	0.8619	D_{15}^{15} [160]	1.48799	$n_{H\alpha}^{14.0}$ [214]	
	173–175	720 [18,19]	0.8610	14.0° [214]	1.48965	$n_{H\alpha}^{13.4}$ [214]	
	60–61	11 [174]	0.8622	13.4° [214]	1.48983	$n_{H\alpha}^{11.0}$ [214]	
	55.5–56	10 [179]	0.8622	$D_{12.7}^{12.7}$ [101]	1.49257	$n_{H\alpha}^{7.9}$ [161]	
	13.3	0.6 [134]	0.8634	11.0° [214]	1.47164	$n_{H\beta}^{77}$ [51]	
	0.8	0.25 [134]	0.8654	D_{10}^{10} [160]	1.5007	$n_{H\beta}^{20}$ [169]	
	0.0	0.23 [134]	0.86700	7.9° [161]	1.50073	$n_{H\beta}^{20.0}$ [101]	
	−5.3	0.14 [134]	0.8693	D_5^5 [160]	1.50089	$n_{H\beta}^{20}$ [120]	
	−5.5	0.14 [134]	0.8701	D_4^4 [160]	1.50210(d)	$n_{H\beta}^{20}$ [53]	
			0.8732	0° [113]	1.50037	$n_{H\beta}^{16.4}$ [214]	
					1.50307	$n_{H\beta}^{16.1}$ [115]	
					1.50537	$n_{H\beta}^{15.0}$ [214]	

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-4-isopropylbenzene (*p*-Cymene) (*Continued*)			1.50208 $n_{H\beta}^{14.0}$ [214]	
			1.50396 $n_{H\beta}^{13.4}$ [214]	
			1.50413 $n_{H\beta}^{11.0}$ [214]	
			1.50698 $n_{H\beta}^{7.9}$ [161]	
			1.5094 $n_{H\gamma}^{20}$ [169]	
			1.50940 $n_{H\gamma}^{20.0}$ [101]	
			1.50930 $n_{H\gamma}^{20}$ [120]	
			1.51103(d) $n_{H\gamma}^{20}$ [53]	
			1.50911 $n_{H\gamma}^{16.4}$ [214]	
			1.51189 $n_{H\gamma}^{16.1}$ [115]	
			1.51449 $n_{H\gamma}^{15.0}$ [214]	
			1.51079 $n_{H\gamma}^{14.0}$ [214]	
			1.51283 $n_{H\gamma}^{13.4}$ [214]	
			1.51305 $n_{H\gamma}^{11.0}$ [214]	
			1.51599 $n_{H\gamma}^{7.9}$ [161]	
			1.45555 $n_{H\epsilon}^{91.2}$ [51]	
			1.47699 $n_{H\epsilon}^{47.0}$ [51]	
			1.48972 $n_{H\epsilon}^{20}$ [51]	
			1.4906 $n_{H\epsilon}^{20}$ [169]	
			1.49166(d) $n_{H\epsilon}^{20}$ [53]	

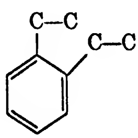
* $\frac{dD}{dt} = -0.0008158[1+0.0005370(t-20)]/°C$ (0 to 175°C)

† $\frac{dD}{dt} = -0.0008076/°C$ (0 to 25°C)

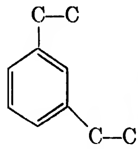
‡ $\frac{dn}{dt} = -0.0004830/°C$ (7 to 25°C)

(a) This figure is given as a freezing point in literature.
(b) This pressure is the average of two determinations.
(c) This density is the average of two or more determinations.
(d) This refractive index is the average of two or more determinations.
(e) This temperature is the average of two determinations.

1,2-Diethylbenzene

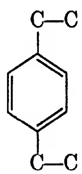


M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	184.4			
	185 [119]	0.866 [119]	1.50257 22° [62]	
	184–184.5 [221]	0.8662 18° [222]	1.49851 $n_{H\alpha}^{22}$ [62]	
	184 [74]	0.8680 15.0° [74]	1.51326 $n_{H\beta}^{22}$ [62]	
	66–67 12 [62]			

M. P., °C	B. P., °C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
1,3-Diethylbenzene 				
	180.7	**0.8607**	**1.4946**	
	182 [119]	0.860 [119]	1.4905 [90]	
	180–182 [221]	0.8602 [221]	1.4955 [39]	
	176–181 [204]	0.8597 D^{25}_{25} [39]	1.4926 25° [39]	
	180.55 [39]	0.8635 23° [90]	1.4978 16° [239]	
	178–180 [90]	0.860 D^{20}_{20} [135]	1.4998 10° [39]	
	176–179 [4]	0.8636 D^{17}_{17} [239]		
	179–181 715 [239]	0.8798 D^{0}_{0} [39]		
	15.7 0.74 [134]			
	10.8 0.43 [134]			
	6.8 0.30 [134]			
	−0.8 0.15 [134]			

$*\ \frac{dD}{dt} = -0.0007619/°C$ (0 to 25°C)

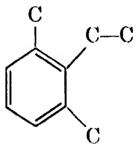
$†\ \frac{dn}{dt} = -0.0005136/°C$ (10 to 25°C)

M. P., °C	B. P., °C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
1,4-Diethylbenzene 				
	182.8	**0.8633**	**1.4969**	
−35 [59]	183 [119,157,214]	0.8640 [228]	1.49671 [110,216]	
	182–183 [118,223]	0.865 [119]	1.4973 [214]	
	182 [59]	0.865 D^{20}_{20} [135]	1.4974 [228]	
	181–182 [10]	0.8645 18.2° [67]	1.4949 25° [157]	
	181.8 [228]	0.8622 18° [223]	1.49897 16.2° [214]	
	6.2 1.35 [134]	0.8678 16.3° [214]	1.4978 14° [108]	
	−0.7 0.83 [134]	0.8679 16.2° [214]	1.50341 5.0° [216]	
	−5.6 0.54 [134]	0.8675 14° [108]	1.49224 $n^{18.2}_{H\alpha}$ [67]	
	−6.7 0.49 [134]		1.49499 $n^{16.2}_{H\alpha}$ [214]	
			1.50665 $n^{18.2}_{H\beta}$ [67]	
			1.50993 $n^{16.2}_{H\beta}$ [214]	
			1.51924 $n^{16.2}_{H\gamma}$ [214]	

$*\ \frac{dD}{dt} = -0.0008340/°C$ (14 to 20°C)

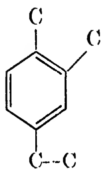
$†\ \frac{dn}{dt} = -0.00044095/°C$ (5 to 25°C)

1,3-Dimethyl-2-ethylbenzene



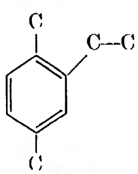
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	80–83	24 [195]			1.5040	24.0° [195]	

1,2-Dimethyl-4-ethylbenzene

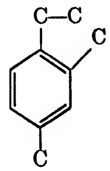
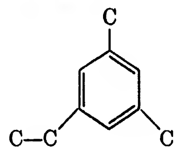
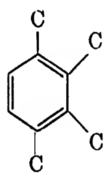


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	187.6						
	189 [9,116]		0.8704 [116]		1.5026 [217]		
	187–188 [201]		0.873 [217]		1.5027 [217]		
	187.6 [228]		0.8792 [228]		1.5030 [217]		
	186–187 [217]		0.8777	15.2° [217]	1.5046 [228]		
	78–80	15 [217]	0.8776	15.05° [217]	1.50489	15.05° [217]	
			0.8782	15.0° [217]	1.50526	15.0° [217]	
					1.50103	$n_{H\alpha}^{15.05}$ [217]	
					1.50142	$n_{H\alpha}^{15.0}$ [217]	
					1.51606	$n_{H\beta}^{15.05}$ [217]	
					1.51647	$n_{H\beta}^{15.0}$ [217]	
					1.52531	$n_{H\gamma}^{15.05}$ [217]	
					1.52584	$n_{H\gamma}^{15.0}$ [217]	

1,4-Dimethyl-2-ethylbenzene



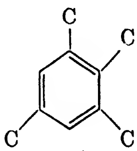
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	185.4						
	185–187 [24]		0.8750	22° [61]	1.5051	22° [61]	
	185–186 [61]		0.8824	17° [108]	1.5026	17° [108]	
	185 [96,201]						
	183–185 [118]						
	183–184 [233]						
	185.5	759 [108]					
	64	10 [108]					

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Ethyl-2,4-dimethylbenzene 				
	185.6			
	186–187 [7]	0.8686 [7]	1.5033 16° [108]	
	186 [8]	0.8772 16° [108]		
	185–186 [201]			
	184–186 [96]			
	184 [162]			
	184–185 754 [108]			
	67–68 12 [108]			
1,3-Dimethyl-5-ethylbenzene 				
	184.3			
	185 [224]	0.861 [224]		
	184–184.6 [155]	0.8644 [91]		
	180–182 [91]			
1,2,3,4-Tetramethylbenzene (Prehnitene) 				
−6.5	**205.0**		**1.5194_5**	
−4 [83,95,191]	205.04 [141]	0.9010 [150]	1.5185 [214]	
−4.9 [153]	205.0 [173]	0.901 [119,214]	1.51865 [110,216]	
−5 [211]	204.5 [137]	0.904 [164]	1.52013 [141]	
−6.4 [137,196]	204.0 [153]	0.9053 [141]	1.5202 [192]	
−6.8 [197]	204 [95,119,128,164,211]	0.9015 25° [141]	1.5203 [150]	
−7.1– −7.0 [192]	203–204 [214]	0.9044 16.0° [214]	1.51811 25° [141]	
−7.1 [193]	203 [150]	0.905 $D_{15.5}^{15.5}$ [153]	1.52031 16.0° [214]	
−7.7 [86,158]	158.46 217.2 [141]		1.52454 6.3° [216]	
	119.40 57.3 [141]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,3,4-Tetramethylbenzene (Prehnitene) *(Continued)*			1.51362 $n^{25}_{H\alpha}$ [141]	*
			1.51563 $n^{20}_{H\alpha}$ [141]	
			1.51621 $n^{16.0}_{H\alpha}$ [214]	
	96.5 25 [192]		1.52923 $n^{25}_{H\beta}$ [141]	
	97–98 24–25 [196]		1.53133 $n^{20}_{H\beta}$ [141]	
			1.53192 $n^{16.0}_{H\beta}$ [214]	
			1.54189 $n^{16.0}_{H\gamma}$ [214]	

* $\frac{dn}{dt} = -0.0003553/°C$ (6 to 25°C)

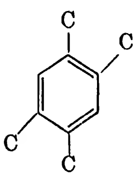
1,2,3,5-Tetramethylbenzene (Isodurene)



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
−24.2	**197.2**			
−24.0 ± 0.1(a) [197]	198.0–198.6 [109]	0.8906 [52]	1.5134 [192]	
−24.0 [158]	198.0 [137]	0.895 [154]	1.51126 n^{20}_{He} [68]	
−24.1 [192]	197.0 [65,153]	0.896 [65]		
−24.5 [86]	196–197 [87,99]	0.899 15.5° [153]		
−28.7 [153]	195–197 [20,21,52,145]			
	195 [93,125,154]			
	84.6–84.7 17 [197]			
	78.8–79.2 11 [109]			

(a) This figure is given as a freezing point in the literature.

1,2,4,5-Tetramethylbenzene (Durene)



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
79.7	**195.4**			
82–83 [116]	196.2–196.4 [109]	0.736 210.2° [49]	1.47896 $n^{81.3}_{H\alpha}$ [57]	Crit. Temp. (°C)
81–82 [84]	196 [95,187,229]	0.820 108.5° [49]	1.49369 $n^{81.3}_{H\beta}$ [57]	402.5 [49,73]
81 [94]	195.8 [137]	0.8380 81.3° [57]		
80–81 [187,229]	195 [16]	0.838 $D^{15.5}_{15.5}$ [153]		Crit. Pressure (mm Hg)
80(a)	193–195 [2,3,72]	1.03 (solid) [171,172]		21,736.0 [73]
79–80(b)	194.0 [153]	1.034 (solid) [114]		
79.3–79.9 [197]	193 [154]			
79.5 [234]	192 [123]			
79.3 [158]	191–192 [67]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4,5-Tetramethylbenzene (Durene) (*Continued*)				
79 [6,37,52]	190–191 [52]			
78–79 [192]	190 [97,212]			
78.9 [58]	1.3 0.033 [134]			
78.7 [109]	−1.3 0.016 [134]			
	−1.7 0.013 [134]			

(a) The melting point 80 is found in references 67, 92, 97, 153, 170, 171, 172, 194, 219.
(b) The melting point 79-80 is found in references 2, 3, 45, 60, 63, 98, 154, 199A, 203, 212, 215, 217.

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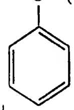
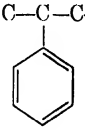
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
n-Pentylbenzene (n-Amylbenzene)	C—(C)$_3$—C 			*
	202.2	**0.8627**	**1.4919**	
−78.25[101]	205.3 ± 0.1[101]	0.8585[61]	1.4883[42]	
	205[42]	0.8600[91,92]	1.4887[91,92]	
	204–205[45,98]	0.8662[127]	1.4920[45]	
	204–204.5[61]	0.8039 94.8°[45]	1.4943[127]	
	202[60]	0.8233 69.8°[45]	1.4830 40°[45]	
	200.8–201.0[101]	0.8384 50.5°[45]	1.4850 35°[45]	
	198–201[87]	0.8385 49.8°[45]	1.48633 30°[101]	
	201–202 761.2[84]	0.8541 30.3°[45]	1.4878 30°[45]	
	200–201 755[17]	0.85100 30°[101]	1.4900 25°[45]	
	201 752[63]	0.8602 22°[84]	1.4920 19°[21,22]	
	200–202 750[21,22]	0.8624 D^{22}_{22}[84]	1.49062 15°[101]	
	200–201 745[17,127]	0.862 D^{20}_{20}[67]	1.4944 14.8°[45]	
	200 –200.5 744[68]	0.8665 19°[21,22]	1.48240 $n^{25}_{H\alpha}$[101]	
	201.7 –203.7 743[13]	0.8662 15.56°[98]	1.48674 $n^{15}_{H\alpha}$[101]	
	200.5 –201.5 743[114]	0.8651 15.5°[84]	1.49572 $n^{25}_{H\beta}$[101]	
	200–201 713[115]	0.8664 $D^{15.5}_{15.5}$[84]	1.50006 $n^{15}_{H\beta}$[101]	
	199–201 729[115]	0.86261 15°[101]	1.50394 $n^{25}_{H\gamma}$[101]	
	197 720[115]	0.8681 11.5°[45]	1.50834 $n^{15}_{H\gamma}$[101]	
	87 12[92]	0.8702 9.2°[45]	(a)	
	81 10[136]	0.87411 0°[101]		
	77–78 9[45,98]			

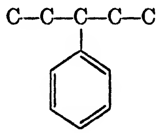
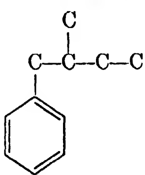
$$* \frac{dD}{dt} = -0.00077907[1+0.0003548(t-20)]/°C \qquad (9 \text{ to } 95°C)$$

$$\dagger \frac{dD}{dt} = -0.00072298/°C \qquad (9 \text{ to } 31°C)$$

$$\ddagger \frac{dn}{dt} = -0.0004456/°C \qquad (14 \text{ to } 40°C)$$

(a) Refractive indices at other lines are found in reference 101.

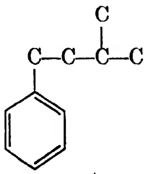
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Phenylpentane	C—C—C—C—C 			
	191.6			
	190–194[113]	0.8529[97]	1.4852[42]	
	192–193[42]	0.8550[97]	1.4853[97]	
	191–193[17]	0.8576[42]	1.4858[97]	

M. P.,:C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Phenylpentane	191-192[111]	0.860[116]	1.4890[119]	
(*Continued*)	191[47]	0.8621[119]	1.4902 25°[111]	
	193-195 772[75]	0.8566 17°[21,22]	1.4850 17.9°[116]	
	191-193 762[40]		1.4845 17°[21,22]	
	194-195 755.5[97]			
	191-193 755[17]			
	195.8-197.2 753.8[97]			
	191-192 750[21,22]			
	189-190 744[119]			
3-Phenylpentane 				
	190-191[42]	0.8649[42]	1.4880[42]	
	187.5[10]	0.8744 21°[20]	1.4868 25°[65]	
	178-182[20]	0.8742 19°[22]	1.4973 19°[22]	
	180[65]	0.8755 15°[48]	1 4988 16°[48]	
	186-188 755[17]			
	187 753[17,48]			
	187-188 752 5[22]			
	185-188 750[109]			
	189-191 741[40]			
	83-85 22[109]			
	73-74 12[48]			
1-Phenyl-2-methylbutane 				
	193.8			
	194-195[42]	0.8584[42]	1.4873[42]	$[\alpha]_D^{25}$ =
	194(a)[66]	0.8680[135]	1.4849(a) 25°[64]	+1.80°[66]
	193[82]	0.855(a) 25°[64]	1.4870(b) 25°[88]	$[\alpha]_D^{25}$ =
	192-193 730[110]	0.8571(b) 25°[88]	1.4884 25°[82]	+1.25°[64]
	192-193 715[31]	0.8576 25°[82]		(c)
	190 710[12]	0.859 25°[66]		
	80(a) 20[66]			
	102 15[24]			
	113-115 11[135]			

(a) This constant was determined on the *dextro*rotatary form.
(b) This constant was determined on the *levo*rotatory form.
(c) The angle of rotation at various wave lengths is given for the *levo*rotatory compound in reference 88.

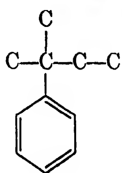
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

1-Phenyl-3-methylbutane
(Isoamylbenzene)

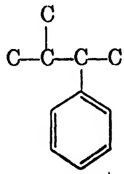
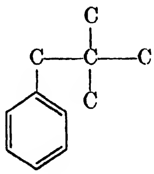
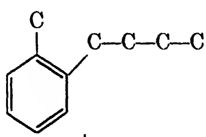


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	193.4						
	197–199[42]		0.856[30]		1.4835[42]		
	194[60]		0.8620	D_{20}^{20}[18]	1.4867	15.6°[49,73]	
	193–194[19]		0.885	18°[19]			
	193[1,71,73,89]		0.8627	15.6°[49]			
	198–199	757[18,49]					
	195	755.5[68]					
	193	736[94]					
	195–196	735[96]					

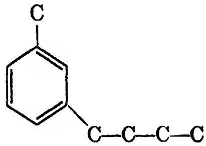
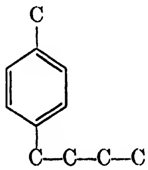
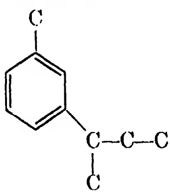
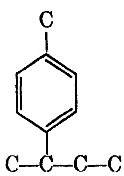
2-Methyl-2-phenylbutane
(*tert*-Pentylbenzene)

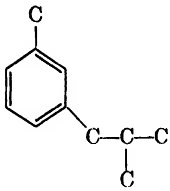
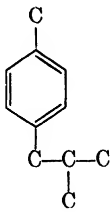
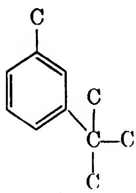
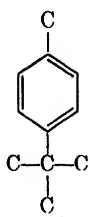


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	189.6						
	190–191[42]		0.86248[4]		1.4920[35,38]		
	189–191[38,55,120]		0.8660[35]		1.4934[42]		
	189–190[11,33]		0.8720[39]		1.4860	25°[82]	
	188–190[108]		0.8737[42]		1.5032	24°[108]	
	189[82]		0.8550	25°[82]	1.49154	23°[33]	
	185–187[61]		0.864	24°[108]			
	186–189	747[109]	0.8657	21.5°[33]			
	189–191	745[39]	0.866	D_{20}^{20}[67]			
	187.5						
	–189.5	737[95]	0.8740	D_0^{20}[55]			
	191–192	735[35]	0.8683	15°[95]			
	77	15[4]	0.8736	15°[95]			
	78–82	14[109]	0.8741	15°[38]			
	71–74	12[103]	0.8889	D_0^0[55]			
	71–72	12[102]					

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Methyl-3-phenylbutane 				
	186 [42] 184 [41] 188–189 753 [48]	0.8795 [41,42] 0.8672 16° [48]	1.4882 [41,42] 1.4972 16° [48]	
1-Phenyl-2,2-dimethylpropane 				
	186–188 [32] 185–186 [42] 185.6– –186.0 757.6 [14] 185.5 * –185.9 756.6 [15]	0.8569 0.8583 [42] 0.7987 91.9° [15] 0.8114 76.3° [15] 0.8192 66.7° [15] 0.8309 52.1° [15] 0.8386 42.5° [15] 0.8483 30.3° [15] 0.8565 20.2° [15] 0.8581 18.3° [14] 0.8647 10° [15] 0.8727 0° [15]	1.4885 [42] 1.48837 18.3° [14]	
1-Methyl-2-*n*-butylbenzene 				
	200–201 [77] 170– –170.5 743.1 [56]	0.874 D_{20}^{20} [67] 0.87135 18.3° [77]	1.49662 18.3° [77] 1.49423 17° [56]	

* $\frac{dD}{dt} = -0.00080231[1+0.0002766(t-20)]/°C$ (0 to 92°C)

M. P., °C	B. P., °C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
1-Methyl-3-*n*-butylbenzene 				
	197–198 [34,77]	0.869 D^{20}_{20} [67] 0.86354 18.4° [77] 0.865 D^{15}_{15} [34]	1.49315 18.4° [77]	
1-Methyl-4-*n*-butylbenzene 				
−85 [93]	**198.4** 197–200 [74] 198–199 [77] 197–199 [100] 192 -192.5 742 [56] 82.7–83.3 13 [93]	0.8586 [93] 0.860 D^{20}_{20} [67] 0.8651 D^{20}_{20} [100] 0.8618 14.2° [77]	1.4916 [93] 1.4940 [100] 1.493565 17° [56] 1.4912 14.2° [77] 1.5009 14° [74]	
1-Methyl-3-*sec*-butylbenzene 				
	194–198 [99] 193–197 [6]		1.4957 [6]	
1-Methyl-4-*sec*-butylbenzene 				
	201–202 [6] 196–197 [130,131] 195–197 [99] 80 19 [35]	0.8665 [35] 0.8640 19° [130,131]	1.4938 [35] 1.4950 [6] 1.4917 19° [130,131]	

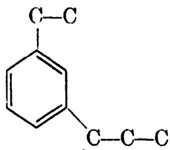
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-3-isobutylbenzene 				
	186–188 [46] 184–185 [26]			
1-Methyl-4-isobutylbenzene 				
	200–205 [76]			
1-Methyl-3-*tert*-butylbenzene 				
	188.5–190 [99] 185–187 [7]			
1-Methyl-4-*tert*-butylbenzene 				
	190.25 192–193 [59] 189–193 [38] 190 [16,122,124] 190–192 751 [8]	**0.8621** 0.861 [124] 0.8628 [35] 0.85968 25° [62]	**1.4915** 1.4916 [124] 1.49187 [59] 1.4919 [35,103] 1.4922 [5]	

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Methyl-4-*tert*-butylbenzene *(Continued)*			0.8614	D_{20}^{20} [59]	1.4940 [38]		
			0.86272	19° [62]	1.489008	25° [62]	
			0.8667	13.25° [124]	1.49465	13.25° [124]	
			0.8771	0° [122]	1.48709	$n_{H\alpha}^{20}$ [59]	
	189.8	746 [5]			1.49118	$n_{H\alpha}^{13.25}$ [124]	
	188	740 [103]			1.50175	$n_{H\beta}^{20}$ [59]	
	186–187	735 [35]			1.50513	$n_{H\beta}^{13.25}$ [124]	
	94	25 [122]			1.51006	$n_{H\gamma}^{20}$ [59]	
	76	15 [62]			1.51400	$n_{H\gamma}^{13.25}$ [124]	
	72–72.5	12 [103]					

* $\frac{dD}{dt} = -0.0007287/°C$ (0 to 25°C)

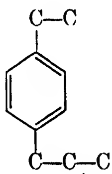
† $\frac{dn}{dt} = -0.0004940/°C$ (13 to 25°C)

1-Ethyl-3-*n*-propylbenzene



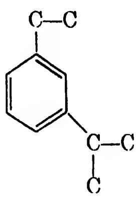
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	193–195 [85,86]		0.8588	19° [85]			

1-Ethyl-4-*n*-propylbenzene

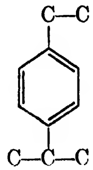
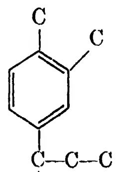


M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	199–200 [128]		0.867	19° [132]			
	202–205	765 [132]					

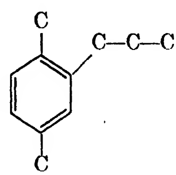
1-Ethyl-3-isopropylbenzene

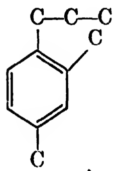
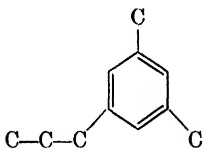
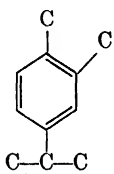
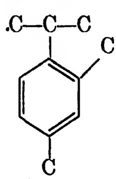


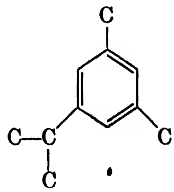
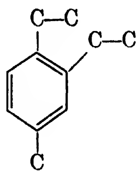
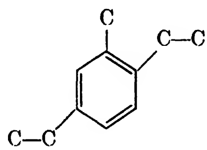
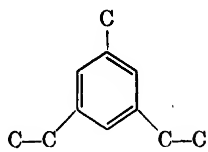
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	190–192 [128,133]						

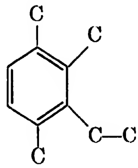
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Ethyl-4-isopropylbenzene 				
	197–198 [128,130,131,133] 196 763 [52] 72 10 [52]	0.864 [130,131] 0.8606 16° [52]	1.4846 [130,131] 1.4928 16° [52]	
1,2-Dimethyl-4-*n*-propylbenzene 				
	209 [121] 202–204 [126]	0.8677 15.3° [126] 0.8750 15° [126] 0.8718 12.85° [126] 0.8719 12.7° [126]	1.4972(a) [126] 1.49752 15.3° [126] 1.50294 15.1° [126] 1.49881 12.7° [126] 1.49390 $n_{H\alpha}^{15.3}$ [126] 1.49925 $n_{H\alpha}^{15.1}$ [126] 1.49504 $n_{H\alpha}^{12.7}$ [126] 1.50804 $n_{H\beta}^{15.3}$ [126] 1.51375 $n_{H\beta}^{15.1}$ [126] 1.50920 $n_{H\beta}^{12.7}$ [126] 1.51681 $n_{H\gamma}^{15.3}$ [126] 1.52277 $n_{H\gamma}^{15.1}$ [126] 1.51784 $n_{H\gamma}^{12.7}$ [126]	

(a) This refractive index is an average of two or more determinations.

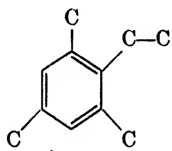
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Dimethyl-2-*n*-propylbenzene 				
	206–207 [121]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-*n*-Propyl-2,4-dimethylbenzene 				
	208–208.5 [121] 206–207 735 [9] 95 23 [78] 90 18 [9]	0.8786 19° [9]	1.4995 25° [78] 1.501 19° [9]	
1,3-Dimethyl-5-*n*-propylbenzene 				
	206–210 [121] 90–91 18 [78]		1.4913 25° [78]	
1,2,-Dimethyl-4-isopropylbenzene 				
	199 [57] 198 732 [50] 86–87.5 16 [50]	0.8710 [57] 0.8729 21.1° [50] 0.8740 15.5° [51]	1.4991 21.1° [50] 1.50001 15.5° [51] 1.49601 $n_{H\alpha}^{15.5}$ [51] 1.51030 $n_{H\beta}^{15.5}$ [51] 1.51913 $n_{H\gamma}^{15.5}$ [51]	
1-Isopropyl-2,4-dimethylbenzene 				
	194–195 [121] 77 13 [78,79]		1.4998 25° [78,79]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3-Dimethyl-5-isopropylbenzene				
	83–85 17[78]		1.4935 25°[78]	
1,2-Diethyl-4-methylbenzene				
	200–203[58]			
1-Methyl-2,5-diethylbenzene				
	205–207[70]			
1-Methyl-3,5-diethylbenzene				
	199.8–201.9[72] 199.8–200[81] 198–200[43]	0.8790[43]		

M. P.,°C	B. P.,°C @ 760mm		D^{20}_{4}		n^{20}_{D}		Additional Data
1,2,4-Trimethyl-3-ethylbenzene 							*
					1.5132		
	214	725 [106]	0.900	D^{20}_{20} [106]	1.5133 [106]		
					1.5088	30° [106]	
					1.5098	28° [106]	
					1.5106	26° [106]	
					1.5115	24° [106]	
					1.5124	22° [106]	
					1.5142	18° [106]	
					1.5150	16° [106]	
					1.5167	12° [106]	
					1.5185	8° [106]	
					1.5202	4° [106]	
					1.5218	0° [106]	

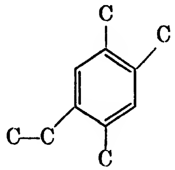
* $\frac{dn}{dt} = -0.0004335/°C$ (0 to 30°C)

M. P.,°C	B. P.,°C @ 760mm		D^{20}_{4}		n^{20}_{D}		Additional Data
1,3,5-Trimethyl-2-ethylbenzene 							*
					1.5080		
−15.56(a) [106]	212–214 [134]		0.866 [123]		1.5074 [106]		
	207–209 [117]		0.894	D^{20}_{20} [106]	1.5111 [123]		
	207–208	755 [52]	0.8907	18.5° [52]	1.51167 [54A,125]		
	210.2	753 [123]	0.8885	16.35° [123]	1.5028	30° [106]	
	210	725 [106]			1.5039	28° [106]	
	93–94	16 [52]			1.5048	26° [106]	
					1.5057	24° [106]	
					1.5066	22° [106]	
					1.5091	18.5° [52]	
					1.5082	18° [106]	
					1.51274	16.35° [123]	
					1.5091	16° [106]	
					1.5110	12° [106]	
					1.5129	8° [106]	
					1.5147	4° [106]	
					1.5161	0° [106]	
					1.50875	$n^{16.35}_{H\alpha}$ [123]	
					1.52416	$n^{16.35}_{H\beta}$ [123]	
					1.53376	$n^{16.35}_{H\gamma}$ [123]	

* $\frac{dn}{dt} = -0.0004397/°C$ (0 to 30°C)

(a) This figure is given as a freezing point in the literature.

1,2,4-Trimethyl-5-ethylbenzene

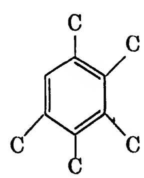


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
					1.5079		
− 13.58(a) [106]	211 [123,126]		0.889	D_{20}^{20} [106]	1.5075 [106]		
	206–208 [118,134]		0.8866	15.85° [123]	1.5086 [123,126]		
	208	758 [52]	0.8867	15.75° [123]	1.5111 [126]		
	210	725 [106]	0.8890	14° [52]	1.5029	30° [106]	
	91–93	15 [126]	0.8937	12.15° [126]	1.5039	28° [106]	
	88	13 [52]	0.8938	12.05° [126]	1.5049	26° [106]	
					1.5057	24° [106]	
					1.5066	22° [106]	
					1.5084	18° [106]	
					1.5094	16° [106]	
					1.51047	15.75° [123]	
					1.5077	14° [52]	
					1.51474	12.05° [126]	
					1.5113	12° [106]	
					1.5128	8° [106]	
					1.5145	4° [106]	
					1.5161	0° [106]	
					1.50654	$n_{H\alpha}^{15.75}$ [123]	
					1.51078	$n_{H\alpha}^{12.05}$ [126]	
					1.52163	$n_{H\beta}^{15.75}$ [123]	
					1.52580	$n_{H\beta}^{12.05}$ [126]	
					1.53112	$n_{H\gamma}^{15.75}$ [123]	
					1.53481	$n_{H\gamma}^{12.05}$ [126]	

* $\frac{dn}{dt} = -0.0004401/°C$ (0 to 30°C)

(a) This figure is given as a freezing point in the literature.

Pentamethylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
53.0	**231.4**		**0.8580**	**100°**			Crit. Temp. (°C)
54.3 [28]	231.9 [69]		0.7735	207.4° [25]	1.5287 [126]		456 [129]
52.2–53.1 [107]	231 [44,60]		0.7822	197.0° [25]	1.50489	72.8° [126]	
53 [23,29,37]	230–230.5 [54]		0.8131	157.8° [25]	1.48484	$n_{H\alpha}^{107.2}$ [27]	
52–53 [36]	230 [2,105,129]		0.8514	108.1° [25]	1.50104	$n_{H\alpha}^{72.8}$ [126]	
52 [104,105]	229 [29]		0.8516	107.8° [25]			

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Pentamethylbenzene (*Continued*)			0.8472	107.2° [27]	1.49932	$n_{H\beta}^{107.2}$ [27]	
			0.8757	75.5° [25]	1.51609	$n_{H\beta}^{72.8}$ [126]	
			0.8780	73.5° [126]			
51.5 [44,54,112]	127–129	20 [105]	0.8786	72.8° [126]			
51 [90]	108	15 [126]	1.018	0° [137]			
50–51 [126]	104.0 –104.2	11 [54]					

$* \frac{dD}{dt} = -0.00074175[1+0.001133(t-100)]/°C$ (72 to 208°C)

$C_{11}H_{16}$ References

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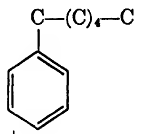
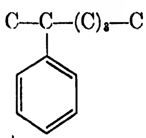
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
***n*-Hexylbenzene** 							
	226.2		**0.8602**		**1.4890**		
−66.8[107]	224–228[133]		0.8592[101,102]		1.4868[101,102]		
	227.35 ± 0.1[107]		0.8613[131]		1.490[131]		
	226–227[50,106]		0.862[36]		1.4902[50]		
	219–223[121]		0.8027	94.8°[50]	1.4811	40°[50]	
	219–220[131]		0.8223	69.7°[50]	1.4860	30°[50]	
	219[94]		0.8371	49.8°[50]	1.48718	25°[107]	
	219–222	768[53]	0.8524	30°[102]	1.4881	25°[50]	
	218–221	750[21]	0.85259	30°[107]	1.49132	15°[107]	
	218–220	750[22]	0.8526	29.7°[50]	1.492	15°[16]	
	223.8		0.8646	15.56°[106]	1.48341	$n^{25}_{H\alpha}$[107]	
	−224.0	748[107]	0.86394	15°[107]	1.48745	$n^{15}_{H\alpha}$[107]	
	216–218	720[120]	0.869	15°[16]	1.49660	$n^{25}_{H\beta}$[107]	
	97.5–101	12[102]	0.8685	9.0°[50]	1.50092	$n^{15}_{H\beta}$[107]	
	93–94	9[50,106]	0.87527	0°[107]	1.50547	$n^{25}_{H\gamma}$[107]	
					1.50976	$n^{15}_{H\gamma}$[107]	
					(a)		

* $\frac{dD}{dt} = -0.0007684/°C$ (0 to 95°C)

† $\frac{dn}{dt} = -0.0003751/°C$ (15 to 40°C)

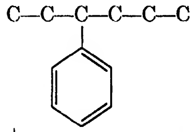
(a) Refractive indices of other lines are found in reference 107.

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
2-Phenylhexane 							
			0.8612				
	208[15]		0.855(a)	25°[72]	1.4902	25°[117]	$[\alpha]_D^{25}$ =
	206–207[117]		0.8581	23.5°[121]	1.4860	17.9°[121]	+1.96°(a)[7]
	210–211	737[45]	0.869	15°[15]	1.492	15°[15]	
	100(a)	22[72]	0.8760	4°[121]			

* $\frac{dD}{dt} = -0.0009412/°C$ (4 to 25°C)

(a) This constant was determined on the *dextro*rotatory form.

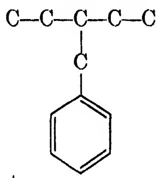
3-Phenylhexane



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	209–212 [114]	0.8524(b) D_{20}^{25} [114]	1.4859(c) [114]	$[\alpha]_D^{24}$ = +0.565°(a) (d)[72]
	106–107 30 [114]	0.863(a) 24° [72]		
	105(a) 27 [72]			
	103(a) 25 [72]			
	95–96 18 [114]			
	65–66 2 [114]			

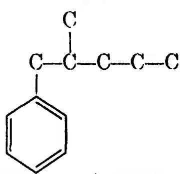
(a) This constant was determined on the *dextro*rotatory form.
(b) This density is the average of two or more determinations.
(c) This refractive index is the average of two or more determinations.
(d) This angle of rotation is the average of two or more determinations.

3-Benzylpentane



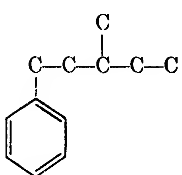
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	216.5–217 735 [115]			

1-Phenyl-2-methylpentane



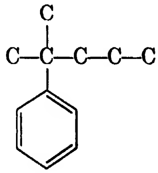
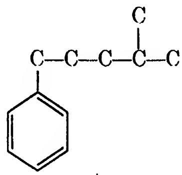
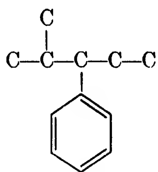
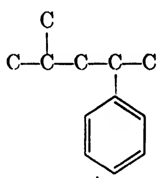
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	203–207 [13,115]	0.8584 25° [13]	1.48273 [13]	
	214 740 [116]			
	110 25 [25]			

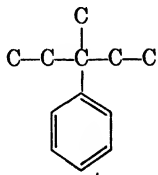
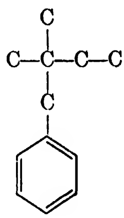
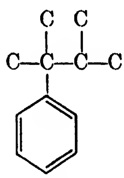
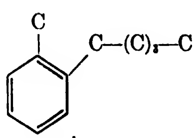
1-Phenyl-3-methylpentane

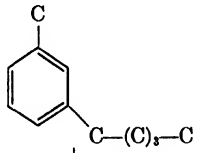
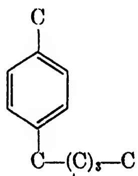
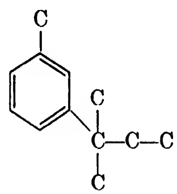


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	219–220 [115]	0.855(a) 25° [73]	1.4859(a) 25° [99]	$[\alpha]_D^{25}$ = −2.94° [73]
	220(b) 757 [61]	0.8585(a) 25° [99]	1.4896(b) 14.5° [61]	$[\alpha]_D^{14.5}$ = +17.20° [61] (b) (c)
	219 740 [116]	0.8644(b) 14.5° [61]		
	112(a) 15 [73]			
	90–91(b) 9 [61]			

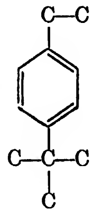
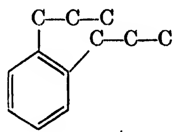
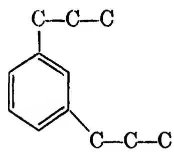
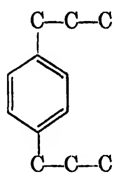
(a) This constant was determined on the *levo*rotatory form.
(b) This constant was determined on the *dextro*rotatary form.
(c) The angle of rotation at various wave lengths is given in reference 99.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Methyl-2-phenylpentane 				
	205–206 [105] 205–206 745 [44]	0.8718 [44] 0.8796 10° [105]	1.49554 16.5° [105]	
1-Phenyl-4-methylpentane 				
	214–215 [3] 212–213 733 [104]	0.8568 16° [104]		
2-Methyl-3-phenylpentane 				
	200 [1]			
2-Methyl-4-phenylpentane 				
	197 [9,56] 197–198 735 [45] 84 13 [56] 77 9 [56]	0.863 15° [9] 0.8634 15° [56]	1.4876 15° [9,56]	

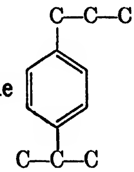
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
3-Methyl-3-phenylpentane 				
	204–206 [105] 205–206 745 [44] 86–88 15 [44]	0.8718 [44] 0.8773 15° [105]	1.49724 16.5° [105]	
2-Methyl-2-benzylbutane 				
	214.5 753 [119]	0.860 19° [119]	1.4882 19° [119]	
2,3-Dimethyl-2-phenylbutane 				
	209–210 745 [44] 86–87 15 [44]	0.8814 [44]		
1-Methyl-2-*n*-pentylbenzene 				
		0.874 D_{20}^{20} [75]		

M. P., °C	B. P., °C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
1-Methyl-3-*n*-pentylbenzene 				
	207–209 [26] 220.5 –222.5 738 [20] 102–106 16.5 [20]	0.8679 22° [26] 0.8647 20° [26] 0.861 D^{20}_{20} [75]	1.49046 21.6° [20]	
1-Methyl-4-*n*-pentylbenzene 				
−28 [103]	98.9–99.5 12 [103]	0.857 [75] 0.8582 [103]	1.4904 [103]	
1-Methyl-3-*tert*-pentylbenzene 				
	208–209 [18] 208.2–208.8 [86]	**0.8671** 8673 [18] 0.8082 100° [18] 0.8161 90° [18] 0.8229 80° [18] 0.8304 70° [18] 0.8337 60° [18] 0.8454 50° [18] 0.8524 40° [18] 0.8602 30° [18] 0.8774 10° [18] 0.8817 0° [18] 0.8888 −10° [18] 0.8930 −20° [18]		

* $\frac{dD}{dt} = -0.00071648[1+0.001016(t-20)]/°C$ (−20 to 100°C)

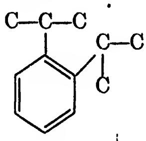
M. P.,°C	B. P.,°C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
1-Ethyl-4-*tert*-butylbenzene 				
	209–213 [19] 207–208 751 [8]	0.865 D^{20}_{20}	1.4950 [8]	
1,2-Di-*n*-propylbenzene 				
	184 [38]	0.8770 15.0° [38]		
1,3-Di-*n*-propylbenzene 				
	215–218 [123A] 105 20 [6]	0.9137 D^{17}_{17} [123A]	1.5155 16° [123A]	
1,4-Di-*n*-propylbenzene 				
	220–222 [66] 218–220 [65] 220–221 745.45 [29] 109 22 [130] 110 20 [6]	0.856 [130] 0.8563 19.4° [130]	1.48775 $n^{19.4}_{H\alpha}$ [130] 1.50136 $n^{19.4}_{H\beta}$ [130] 1.4914 n^{20}_{He} [130] 1.49167 $n^{19.4}_{He}$ [130]	

1-*n*-Propyl-4-isopropylbenzene



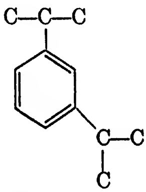
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	213.5 –215.5	745.45[28]	0.871	8°[11]	1.502	8°[11]	
	210	731[11]					

1,2-Diisopropylbenzene



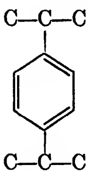
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	209[124]						

1,3-Diisopropylbenzene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	203.5–204.5[10]		0.8566[83]		1.4884[83]		
	204[51,124]		0.8596[51]		1.4838	30°[83]	
	203.0[83]		0.8484	30°[83]			
	203–205	766[35]					
	75–76	9[51]					

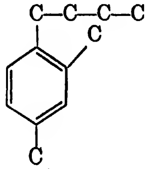
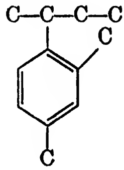
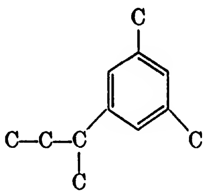
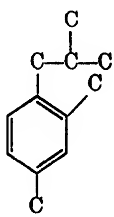
1,4-Diisopropylbenzene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	208.9		**0.8576_5**		**1.4900**		
	210.3[83]		0.8571[83]		1.4895[83]		
	210[54]		0.8494	30°[83]	1.4907[47]		
	205–210[79]		0.8550	25°[91]	1.4850	30°[83]	
	204.5[91]		0.860	14°[54]	1.4892	25°[91]	
	205.5–206.5	755[46]			1.492	16°[54]	
	85–86	14[54]					

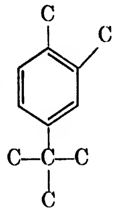
* $\frac{dD}{dt} = -0.0007651/°C$ (14 to 30°C)

† $\frac{dn}{dt} = -0.0004736/°C$ (16 to 30°C)

M. P.,°C	B. P.,°C @ 760mm	D_4^{2}	n_D^{20}	Additional Data
1-*n*-Butyl-2,4-dimethylbenzene 				
	96 8[85]	0.8728 D_{20}^{20}[85]	1.4972 25°[85]	
1-*sec*-Butyl-2,4-dimethylbenzene 				
	84 8[85]	0.8680 D_{20}^{20}[85]	1.4939 25°[85]	
1,3-Dimethyl-5-*sec*-butylbenzene 				
	98 15[85]	0.8631 D_{20}^{20}[85]	1.4920 25°[85]	
1-Isobutyl-2,4-dimethylbenzene 				
	96 15[85]	0.8704 D_{20}^{20}[85]	1.4974 25°[85]	

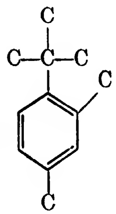
M. P.,°C	B. P.,°C @ 760mm	D^{20}_4	n^{20}_D	Additional Data

1,2-Dimethyl-4-*tert*-butylbenzene



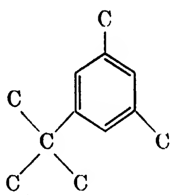
M. P.,°C	B. P.,°C @ 760mm	D^{20}_4	n^{20}_D	Additional Data
	83–85 3 [84]		1.4970 25° [84]	

1-*tert*-Butyl-2,4-dimethylbenzene



M. P.,°C	B. P.,°C @ 760mm	D^{20}_4	n^{20}_D	Additional Data
-31 [85]	210–214 [112]			
	113–114 28 [112]	0.9372 30° [112]	1.5030 37° [112]	
	86 12 [85]	0.8634 D^{20}_{20} [85]	1.4909 25° [85]	

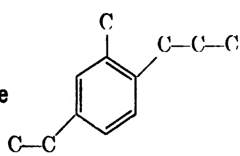
1,3-Dimethyl-5-*tert*-butylbenzene



M. P.,°C	B. P.,°C @ 760mm	D^{20}_4	n^{20}_D	Additional Data
	205.1		**1.4958**	
-21.5 [85]	205.5–206.5 [90]	0.8619 30° [112]	1.4890 37° [112]	
	204–206 [76]	0.8671 D^{20}_{20} [85]	1.4935 25° [85]	
	200–202 [112]	0.870 15° [76]	1.4980 15° [76]	
	203–206 756 [71]			
	200–202 747 [7]			
	85 11 [27]			

* $\frac{dn}{dt} = -0.00040797/°C$ (15 to 37°C)

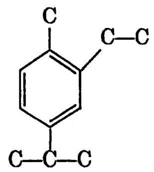
1-Methyl-2-*n*-propyl-5-ethylbenzene



M. P.,°C	B. P.,°C @ 760mm	D^{20}_4	n^{20}_D	Additional Data
	213–215 [78]	0.8831 11° [78]		

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

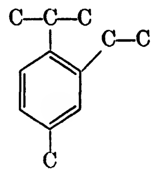
-Methyl-2-ethyl-4-isopropylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8673				*
	204[127]		0.8665	21.1°[57]	1.4965	21.1°[57]	
	214	754[57]	0.8706	15.7°[58]	1.49878	15.6°[58]	
	104–105	21[127]	0.8708	15.6°[58]	1.49670	15°[58]	
	103	19[57]			1.49494	$n_{H\alpha}^{15.6}$ [58]	
	100	17[58]			1.49275	$n_{H\alpha}^{15}$ [58]	
					1.50878	$n_{H\beta}^{15.6}$ [58]	
					1.50669	$n_{H\beta}^{15}$ [58]	
					1.51739	$n_{H\gamma}^{15.6}$ [58]	
					1.51530	$n_{H\gamma}^{15}$ [58]	

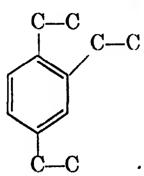
* $\frac{dD}{dt} = -0.00077095/°C$ (15 to 21°C)

-Isopropyl-2-ethyl-4-methylbenzene

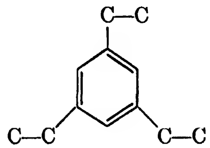
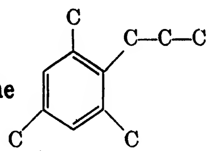
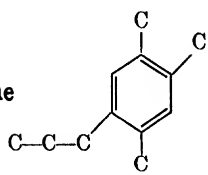
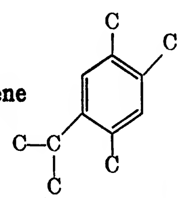


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	209–213[128]		0.8756	15.7°[128]	1.49819	$n_{H\alpha}^{15.7}$ [128]	
					1.51229	$n_{H\beta}^{15.7}$ [128]	
					1.52096	$n_{H\gamma}^{15.7}$ [128]	
					1.50227	$n_{H\epsilon}^{15.7}$ [128]	

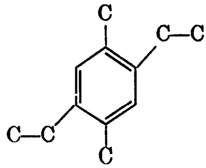
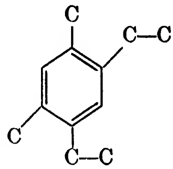
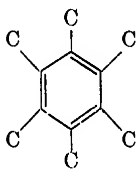
,2,4-Triethylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
86–87[109]	218[69]		0.882[69]		1.4983	17°[60]	
	216–218[59]		0.8819	17°[60]			
	217–218	755[60]					
	99	15[60]					

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,3,5-Triethylbenzene 							*
	216.2		**0.8624**				
100–102 [109]	218 [34,69]		0.863 [69]		1.4951 [60]		
	217.04 [132]		0.8633 [55]		1.4956	18.1° [87]	
	217 [55]		0.8655 [132]				
	215.2–216.2 [89]		0.8568	25° [23]			
	215.4 [88]		0.8636	17° [60]			
	215–215.2 [89]		0.8772	0° [23]			
	214	765 [81]					
	214.8	755.1 [87]					
	215	755 [60]					
	95	14 [60]					
	66	4 [81]					
1,3,5-Trimethyl-2-*n*-propylbenzene 							
	220–221 [62,123]		0.8757	25° [62]	1.5009	25° [62]	
			0.8773	20° [123]			
1,2,4-Trimethyl-5-*n*-propylbenzene 							
	226–228 [42]		0.887 [42]		1.5095 [42]		
1,2,4-Trimethyl-5-isopropylbenzene 							
	221.5–223.5 [129]		0.8795	21° [129]	1.50648	21° [129]	

* $\frac{dD}{dt} = -0.0008372/°C$ (0 to 25°C)

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Dimethyl-2,5-diethylbenzene 				
	104.5–105 15 [30]	0.8803 [30]	1.5091 [30]	
1,5-Dimethyl-2,4-diethylbenzene 				
	105 15 [96]			
Hexamethylbenzene 				
165.3	**263.8**			
166 [37,48,49,63,126] 165.5 [5,93,113,122,125] 165 [108] 164–165 [4,64] 164.3–164.8 [111] 164(a) 163.5–164 [14] 163 [2,40] 162–163 [52,9a] 162 [110]	265 [37,49,70] 264–265 [48] 264 [32,33] 263.9 [82] 263.6 [77] 263 [31]	1.072 0° [134] 1.020 (solid) [67] 1.042 (solid) [17]	(b)	

(a) The melting point 164 is found in references 17, 24, 31, 32, 33, 41, 43, 74, 80, 97, 98, 100, 118.
(b) Refractive indices of other lines may be found in reference 12.

$C_{12}H_{18}$ References

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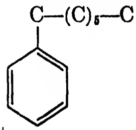
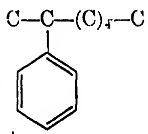
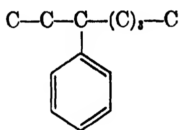
Compound	M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
n-Heptylbenzene 								*
		237.8		**0.8595**		**1.4884**		
		244-246[54]		0.8570[53]		1.4860[46,47]		
		240-241[24,49]		0.8590[46,47]		1.4865[53]		
		240[43]		0.8604[17]		1.4888[24]		
		232-236[30]		0.8039	94.8°[24]	1.4800	40°[24]	
		235[8,53]		0.8221	69.7°[24]	1.4822	35°[24]	
		233[1]		0.8370	49.8°[24]	1.4845	30°[24]	
		229-231[52]		0.8522	30°[47]	1.4868	25°[24]	
		233-234	748.5[31]	0.8520	29.7°[24]	1.4857	18.5°[52]	
		110	15[1]	0.867	D_{20}^{20}[35]	1.4902	16.5°[24]	
		116-118	12[47]	0.8637	15.56°[49]	1.48262	$n_{H\alpha}^{20}$[17]	
		105	12[30]	0.8678	8.4°[24]	1.49515	$n_{H\beta}^{20}$[17]	
		110	10[6]			1.50290	$n_{H\gamma}^{20}$[17]	
		108-110	10[29]			1.48640	$n_{H\epsilon}^{20}$[17]	
		108-109	9[24,49]					

* $\frac{dD}{dt} = -0.0007486/°C$ (0 to 75°C)

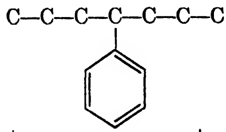
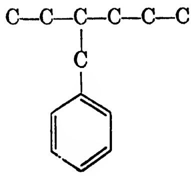
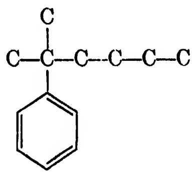
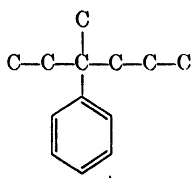
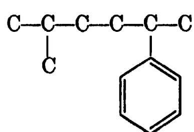
† $\frac{dn}{dt} = -0.0004125/°C$ (16 to 40°C)

Compound	M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
2-Phenylheptane 								
				0.8610				
		229-231[51]		0.861[51]		1.4857	18.5°[51]	
		226.5-227.5[14]		0.8598	21.5°[52]			
				0.8772	0°[52]			

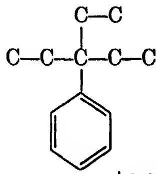
* $\frac{dD}{dt} = -0.0008094/°C$ (0 to 22°C)

Compound	M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
3-Phenylheptane 								*
		105(a)	16[32]	0.8558(b)	25°[42]	1.4871[20]		$[\alpha]_D^{25} =$ +0.75°(a)[33]
		112(a)	15[33]	0.856(a)	25°[32,33]	1.4848(b)	25°[42]	$[\alpha]_D^{25} =$ +0.97°(a)[32]
		68-71	3[20]	0.8585	D_{25}^{25}[20]			(c)

(a) This constant was determined on the *dextro*rotatory form.
(b) This constant was determined on the *levo*rotatory form.
(c) The angle of rotation at various wave lengths is given in reference 42.

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4-Phenylheptane 				
	221–224 [23]			
3-Benzylhexane 				
	120 24 [15] 117 18 [16]			
2-Methyl-2-phenylhexane 				
	223.5 –224.5 745.6 [22] 107 –107.5 20 [22]	0.8737 [22]		
3-Methyl-3-phenylhexane 				
	106–107 20 [22] 110–112 15 [19] 100 15 [22]	0.8819 [19]	1.4964 [22] 1.49951 15° [19]	
2-Methyl-5-phenylhexane 				
	223 [26]	0.8696 15° [26]		

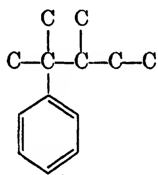
3-Ethyl-3-phenylpentane



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8679				*
	220–222 [48]		0.8786 [22]		1.4975 [22]		
	225–226	757.6 [7]	0.8262	75.1° [7]	1.49211	25° [48]	
	225–226	745 [22]	0.8437	52.2° [7]	1.4953	25° [22]	
	107–108	20 [22]	0.8513	42.5° [7]			
			0.8593	31.2° [7]			
			0.8656	25° [48]			
			0.8692	17.8° [7]			
			0.8747	10.6° [7]			
			0.8826	0° [7]			

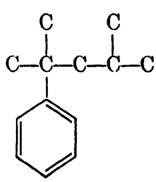
* $\frac{dD}{dt} = -0.0007367[1+0.001035(t-20)]/°C$ (0 to 75°C)

2,3-Dimethyl-2-phenylpentane



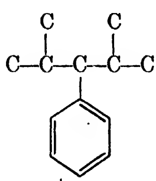
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	222–223	745 [22]	0.8801 [22]				
	105–107	20 [22]					

2,4-Dimethyl-2-phenylpentane

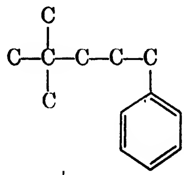
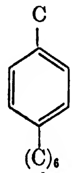
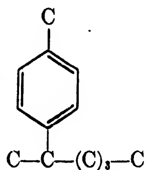
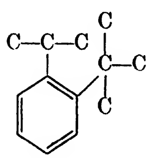
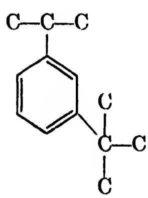


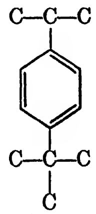
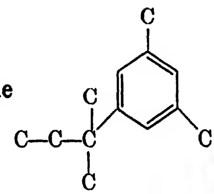
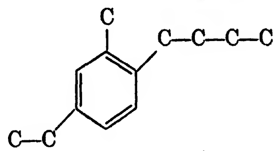
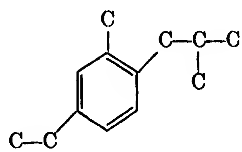
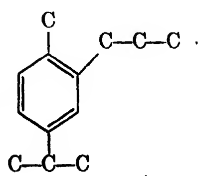
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	218 [48]		0.8638 [34]		1.4852 [34]		
	216–217	745.7 [22]	0.8724 [22]		1.49383	16.5° [48]	
	101–102	20 [22]	0.8741	15° [48]			
	101–102	15 [34]					

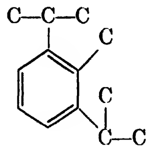
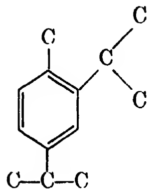
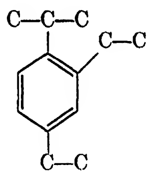
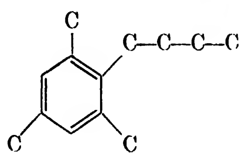
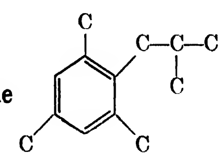
2,4-Dimethyl-3-phenylpentane

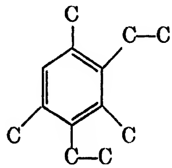
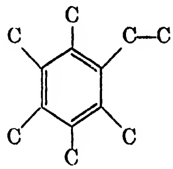


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	220–225 [38,39]						

M. P., °C	B. P., °C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
2,2-Dimethyl-5-phenylpentane 					
	115	9[21]	0.9443[21] 0.9460 D_{20}^{20}[21]		
1-Methyl-4-hexylbenzene 					
−30.5[45]	236–238[37] 115–115.5	 12[45]	0.8569[45]	1.4890[45]	
2-*p*-Tolylhexane 					
	162–165	135[50]	0.855 D_{20}^{25}[50]	1.4910[50]	
1-Isopropyl-2-*tert*-butylbenzene 					
	208	729[3]			
1-Isopropyl-3-*tert*-butylbenzene 					
	216	729[3]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Isopropyl-4-*tert*-butylbenzene				
	222 729[3]	0.8648 15°[2,4]	1.4928[2,4]	
	221 727[2,4]			
	69 3[2,4]			
1,3-Dimethyl-5-*tert*-pentylbenzene				
	102–103 14[40]			
1-Methyl-2-*n*-butyl-5-ethylbenzene				
	236–237[36]	0.8862 11°[36]		
1-Methyl-2-isobutyl-5-ethylbenzene				
	228–229[36]	0.8863 11°[36]		
1-Methyl-2-*n*-propyl-4-isopropylbenzene				
	225[9]	0.902 17°[9]	1.49585 15°[27]	
	226 766[27]	0.8685 15°[27]	1.49198 $n_{H\alpha}^{15}$ [27]	
	106–107.5 13[27]		1.50549 $n_{H\beta}^{15}$ [27]	
			1.51386 $n_{H\gamma}^{15}$ [27]	

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,3-Diisopropyl-2-methylbenzene							
	228.7	770 [13]	0.8768 [13]		1.5040	18° [13]	
1-Methyl-2,4-diisopropylbenzene							
	220 [5] 225	 770 [12]	0.8664 [12] 0.880	 0° [5]	1.499 [12]		
1-Isopropyl-2,4-diethylbenzene							
	224–226 [18]						
1,3,5-Trimethyl-2-*n*-butylbenzene							
	237–241 [25]						
1,3,5-Trimethyl-2-isobutylbenzene							
	228–230 125–127	754 [28] 24 [28]	0.8782	18° [28]	1.5004	18° [28]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5-Trimethyl-2,4-diethylbenzene 				
	229–236[41]			
Pentamethylethylbenzene 				
125[10,44]				Sublimation Temp. (°C) 118[10,11,44]

$C_{13}H_{20}$ References

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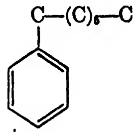
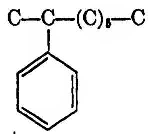
n-Octylbenzene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	263.6		**0.8582_5**		1.4851 [40,41]		
			0.8582 [40,41]		1.4858 [11]		
−7[1]	264–265 [12]		0.8583 [12]		1.4861	18.4° [50]	
	262–264 [1]		0.859 [11]		1.48194	$n_{H\alpha}^{20}$ [12]	
	263 [28]		0.8512	30° [41]	1.49437	$n_{H\beta}^{20}$ [12]	
	261–263 [54]		0.8593	20.5° [50]	1.50193	$n_{H\gamma}^{20}$ [12]	
	256–259	761 [11,30]			1.48534	$n_{H\epsilon}^{20}$ [12]	
	131–134	12 [41]					
	115.5 −118.5	9 [50]					

* $\frac{dD}{dt} = -0.0007050/°C$ (20 to 30°C)

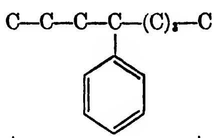
2-Phenyloctane



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8611				
	123–125	20 [52]	0.854 [52]		1.4837 [52]		
	125–127	18 [38]	0.860 [49]		1.4861	18.4° [48,49]	
	115.5 −118.5	6 [48]	0.8526	D_{50}^{50} [38]	1.48790	17° [38]	
	115–118	6 [49]	0.859	20.5° [48]			
			0.8593	20.5° [50]			
			0.8626	D_{17}^{17} [38]			
			0.878	0° [48]			
			0.8782	0° [50]			

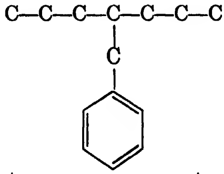
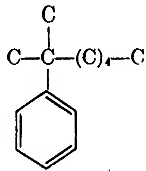
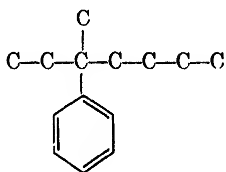
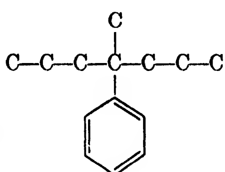
* $\frac{dD}{dt} = -0.0007376/°C$ (0 to 50°C)

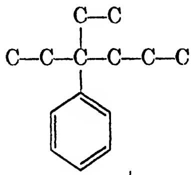
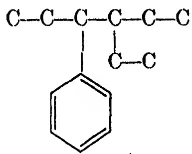
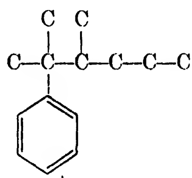
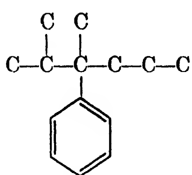
4-Phenyloctane

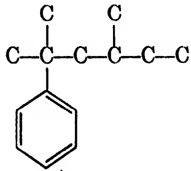
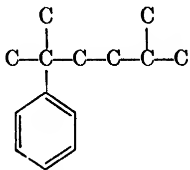
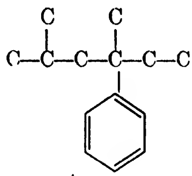
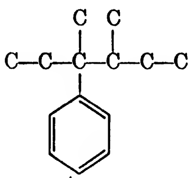
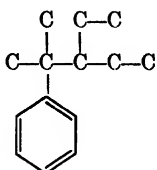


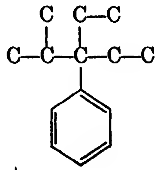
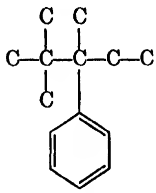
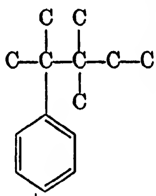
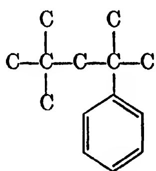
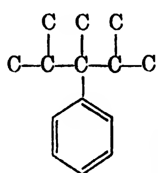
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	119	18 [29]	0.855(a)	25° [29]			$[\alpha]_D^{25} = +0.62°$(a)[29]

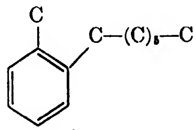
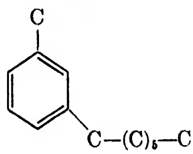
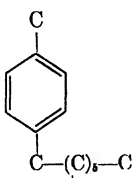
(a) This constant was determined on the *dextro*rotatory form.

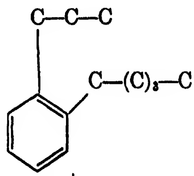
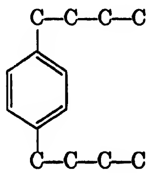
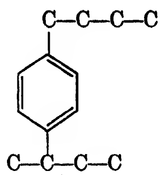
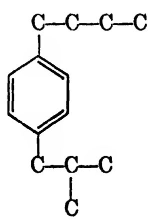
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4-Benzylheptane 				
	241–244 756 [36] 241–243 756 [3,35]	0.854 14° [3,35,36]	1.487 14° [36]	
2-Methyl-2-phenylheptane 				
	243 738 [20] 116–118 16 [20]	0.8756 [20]	1.4951 [20]	
3-Methyl-3-phenylheptane 				
	120–121 17 [18]	0.8738 [18]	1.4932 [18]	
4-Methyl-4-phenylheptane 				
	242–243 749 [18] 120–121 12 [15] 109–111 10 [18]	0.8700 [18] 0.8708 [15]	1.4930 [18] 1.49326 15° [15]	

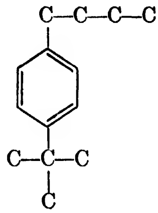
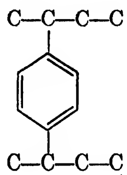
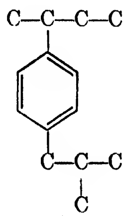
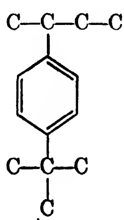
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
3-Ethyl-3-phenylhexane 				
	237–238 [15] 237–238 745 [18] 116–117 14 [18]	0.8788 [18] 0.8748 16° [15]	1.49383 [15] 1.4968 [18]	
3-Ethyl-4-phenylhexane 				
	205 [2]			
2,3-Dimethyl-2-phenylhexane 				
	236 748 [20] 105–107 14 [20]	0.8861 [20]	1.4961 [20]	
2,3-Dimethyl-3-phenylhexane 				
	237–238 748 [18] 104.5 –106.5 11 [18]	0.8763 [18]	1.4958 [18]	

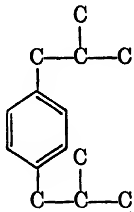
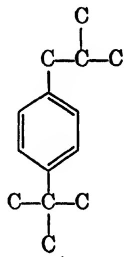
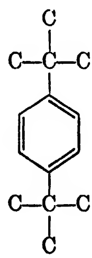
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,4-Dimethyl-2-phenylhexane 				
	238 748 [20] 112–115 17 [20]	0.8729 [20]	1.4920 [20]	
2,5-Dimethyl-2-phenylhexane 				
	236 748 [20] 113–116 19 [20] 116–117 14 [15]	0.8749 [20] 0.8844 18° [15]	1.4939 [20] 1.50233 15° [15]	
2,4-Dimethyl-4-phenylhexane 				
	114–116 10 [18]	0.8750 [18]	1.4918 [18]	
3,4-Dimethyl-3-phenylhexane 				
	112–114 10 [18]	0.8757 [18]	1.4929 [18]	
2-Methyl-2-phenyl-3-ethylpentane 				
	236 748 [20] 103–106 12 [20]	0.8782 [20]	1.4942 [20]	

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Methyl-3-ethyl-3-phenylpentane 				
	238–239 745[18] 113–114 14[18]	0.8816[18]	1.4981[18]	
2,2,3-Trimethyl-3-phenylpentane 				
	257–259 743[18] 124–127 15[18]			
2,3,3-Trimethyl-2-phenylpentane 				
	235 748[20] 110–113 17[20]	0.8939[20]	1.5031[20]	
2,2,4-Trimethyl-4-phenylpentane 				
	234.5 748[20] 103–106 15[20]	0.8803[20]	1.4938[20]	
2,3,4-Trimethyl-3-phenylpentane 				
	234–236 743[18]	0.8808[18]	1.4970[18]	

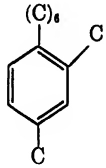
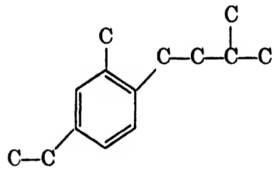
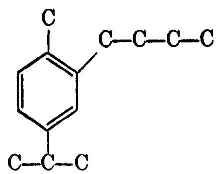
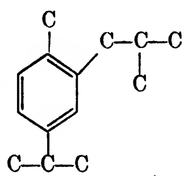
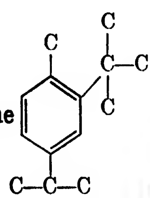
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-2-*n*-heptylbenzene 				
	263–263.2 [12]	0.8717 [12]	1.49124 $n^{20}_{H\alpha}$ [12] 1.50452 $n^{20}_{H\beta}$ [12] 1.51263 $n^{20}_{H\gamma}$ [12] 1.49521 n^{20}_{He} [12]	
1-Methyl-3-*n*-heptylbenzene 				
	260.0–260.8 [12]	0.8615 [12]	1.48722 $n^{20}_{H\alpha}$ [12] 1.50089 $n^{20}_{H\beta}$ [12] 1.50884 $n^{20}_{H\gamma}$ [12] 1.49140 n^{20}_{He} [12]	
1-Methyl-4-*n*-heptylbenzene 				
−28.5[16]	265.0–265.2 [12] 127–127.5 10 [42]	0.8560 [12] 0.8586 [42]	1.4886 [42] 1.48598 $n^{20}_{H\alpha}$ [12] 1.49908 $n^{20}_{H\beta}$ [12] 1.50712 $n^{20}_{H\gamma}$ [12] 1.48968 n^{20}_{He} [12]	

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
1-Propyl-2-*n*-pentylbenzene 					
	128–130	16[9]			
1,4-Di-*n*-butylbenzene 					
−24[16]	259 124	745[16] 15[16]	0.8556[16]	1.48792[16]	
1-*n*-Butyl-4-*sec*-butylbenzene 					
	250 117	739[16] 15[16]	0.8570[16]	1.48849[16]	
1-*n*-Butyl-4-isobutylbenzene 					
	251 118	743[16] 15[16]	0.8508[16]	1.48580[16]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-*n*-Butyl-4-*tert*-butylbenzene 				
−46[16]	248 743[16] 116 15[16]	0.8595[16]	1.48984[16]	
1,4-Di-*sec*-butylbenzene 				
−58[16]	237[33] 233–237[21] 236–238 744[52] 239 739[16] 108 15[16]	0.8573[16] 0.862[52] 0.8548 25°[33]	1.48782[16] 1.4884[21] 1.489[52] 1.4880 25°[33]	
1-*sec*-Butyl-4-isobutylbenzene 				
	241 739[16] 113 15[16]	0.8511[16]	1.48560[16]	
1-*sec*-Butyl-4-*tert*-butylbenzene 				
	235 745[16] 108 15[16]	0.8607[16]	1.48916[16]	

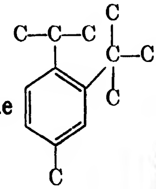
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
1,4-Diisobutylbenzene 					
−21[16]	242	739 [16]	0.8456 [16]	1.48338 [16]	
	109	15 [16]			
1-Isobutyl-4-*tert*-butylbenzene 					
	239	751 [16]	0.8547 [16]	1.48753 [16]	
	109	15 [16]			
1,4-Di-*tert*-butylbenzene 					
77.8	**237.0**				
78–78.5[21,27,45]	238 [47]		0.8659 [19]	1.4624 90° [27]	
78[22]	236.5 [7]				
77–78[19,43,44]	234–236 [32]				
77.7[16]	234–236	746 [52]			
77[4,33,52]	237	743 [16]			
76.5–77[17]	109	15 [16]			
76(a)					
75[39]					

(a) The melting point 76 is found in references 7, 8, 14, 32, 34, 47.

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Hexyl-2,4-dimethylbenzene 				
	131–133 13[13]	0.886 D_0^{20}[13]	1.4972[13]	
1-Methyl-2-(3′-methylbutyl)-5-ethylbenzene 				
	245–246[31]	0.8801 11°[31]		
1-Methyl-2-*n*-butyl-4-isopropylbenzene 				
	235[10]	0.892 17°[10]		
1-Methyl-2-isobutyl-4-isopropylbenzene 				
	230[10]	0.916 17°[10]		
1-Methyl-2-*tert*-butyl-4-isopropylbenzene 				
	237 729[6]			

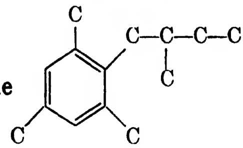
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1-Isopropyl-2-*tert*-butyl-4-methylbenzene



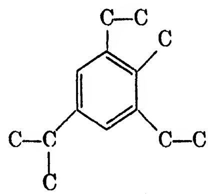
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	227 737[5]			
	226 729[6]			

1,3,5-Trimethyl-2-(2′-methylbutyl)-benzene



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	241–243 747[26]	0.8751 23.3°[26]	1.4976 23°[26]	
	133–135 19[26]			

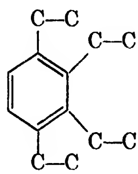
1,3-Diethyl-2-methyl-5-isopropylbenzene



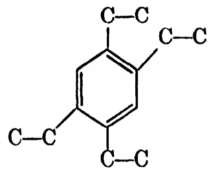
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	243–245[53]	0.8846(a)[53]	1.5000(a)[53]	

(a) The temperature of the density and index of refractive was not given.

1,2,3,4-Tetraethylbenzene



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
		0.8881_5		*
11.6[51]	254[23]	0.88780[37]	1.50845 19.6°[37]	
	252–254[37]	0.88556 25°[37]	1.50444 $n_{H\alpha}^{19.6}$[37]	
	121.7 14[51]	0.88664 19.6°[37]		

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,3,4-Tetraethylbenzene (*Continued*)		0.89092 15° [37] 0.89405 10° [37] 0.89822 4° [37]	1.51890 $n_{H\beta}^{19.6}$ [37] 1.52798 $n_{H\gamma}^{19.6}$ [37]	
	119–120 11 [46]			
* $\frac{dD}{dt} = -0.00060842/°C$ (4 to 25°C)				
1,2,4,5-Tetraethylbenzene 				
13[24]	250 [24] 248 755 [25]	0.884 16° [25]	1 5041 16° [25]	

$C_{14}H_{22}$ References

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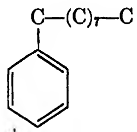
n-Nonylbenzene

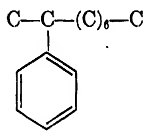


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8584		**1.4863**		*
	280–281 [26,45,63]		0.8050	94.8° [26]	1.4863 [26]		
	145–147	19 [71]	0.8226	69.7° [26]	1.4781	40° [26]	†
	146	14 [81]	0.8371	49.8° [26]	1.4822	30° [26]	
	137.5		0.8513	29.7° [26]	1.485	$n_{H\alpha}^{20}$ [45]	
	–138.5	9 [26,63]	0.8626	15.56° [63]			
	98–100	1 [79]	0.8659	9.2° [26]			

$* \frac{dD}{dt} = -0.00071645/°C$ (9 to 95°C)

$† \frac{dn}{dt} = -0.0004100/°C$ (20 to 40°C)

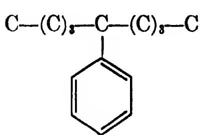
2-Phenylnonane



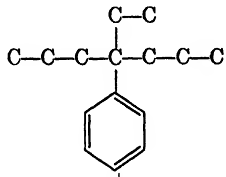
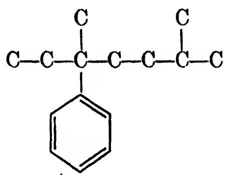
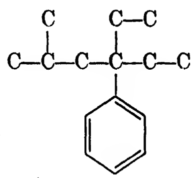
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8627				*
	145–147	19 [69,70]	0.862 [70]		1.4869	21.5° [69,70]	
			0.860	22° [69]			
			0.8616	22° [71]			
			0.877	0° [69]			
			0.8774	0° [71]			

$* \frac{dD}{dt} = -0.00073333/°C$ (0 to 22°C)

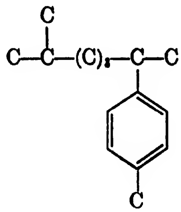
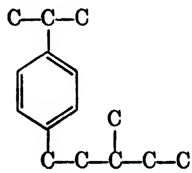
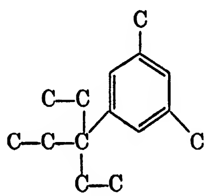
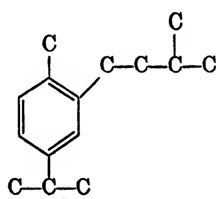
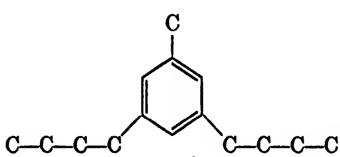
5-Phenylnonane



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	126–127	12 [50]	0.8477	D_{60}^{60} [50]	1.4874	18.5° [50]	
			0.8596	D_{20}^{20} [50]			

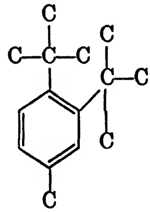
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4-Ethyl-4-phenylheptane 				
	127–128 15[19]	0.8698[19]	1.49211 15°[19]	
3,6-Dimethyl-3-phenylheptane 				
	122–123 14[19]	0.8788 16°[19]	1.49894 13°[19]	
2-Methyl-4-ethyl-4-phenylhexane 				
	240–242[19]	0.8725 16°[19]	1.49097[19]	
1-Methyl-4-Octylbenzene 				
11–12[40] -26.5[61]	281–283[40] 269–271[25] 141–141.5 11[61]	0.8574[61] 0.8966(a) D_{20}^{20}[25] 0.9057 D_0^0[25]	1.4872[61] 1.49982(b)[25]	

(a) This density is the average of two determinations.
(b) The temperature for this refractive index is not given.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Methyl-6-*p*-tolylheptane 				
	135–136 15[54]	0.8524 15°[54]	1.4832 16°[54]	
1-Isopropyl-4-(3′-methylpentyl)-benzene 				$[\alpha]_D^{15.5}$ = +15.91°[31]
	265 748[31] 131–132 10.2[31]	0.8632 15.5°[31]	1.4921 15°[31]	
1,3-Dimethyl-5-[3′-(3′-ethylpentyl)]-benzene 				
	257–259 745[4]			
1-Methyl-2-(3′-methylbutyl)-4-isopropylbenzene 				
	111–115 12[53]			
1-Methyl-3,5-di-*n*-butylbenzene 				
	240–245[47]			

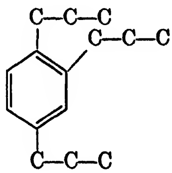
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

1,2-Di-*tert*-butyl-4-methylbenzene



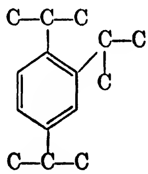
M. P.,°C	B. P.,°C	@ mm	D_4^{20}		n_D^{20}		Additional Data
31.5–32 [8]	227.5–228	735 [8]					
	117–118	15.5 [8]					
	111–112	12 [8]					

1,2,4-Tri-*n*-propylbenzene



M. P.,°C	B. P.,°C	@ mm	D_4^{20}		n_D^{20}		Additional Data
	135	20 [3]					

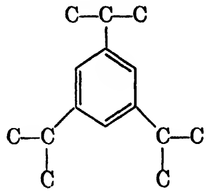
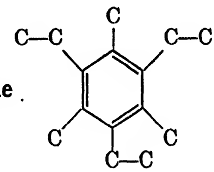
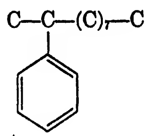
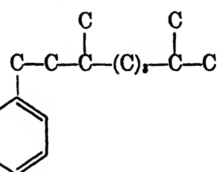
1,2,4-Triisopropylbenzene

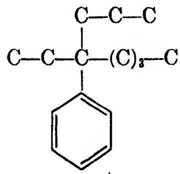
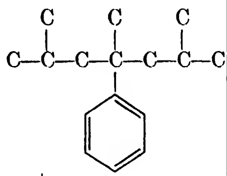
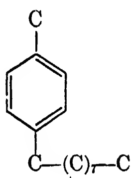
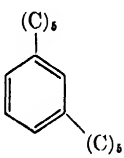
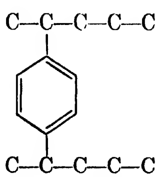


M. P.,°C	B. P.,°C	@ mm	D_4^{20}		n_D^{20}		Additional Data
			0.8620		**1.4924**		
	244 [30]		0.862 [21]		1.4926 [46]		
	240–242	753 [21]	0.8634 [46]		1.4929 [21]		
	237–237.5	752 [5]	0.8556	30° [46]	1.4883	30° [46]	
			0.8593	D_{25}^{25} [5]	1.4896	25° [64]	
	237.0	736 [64]			1.494	16° [30]	
	113–114	14 [30]	0.8599	D_{25}^{25} [64]			
	97–97.5	4 [5]	0.863	16° [30]			
			0.8674	D_0^0 [5]			

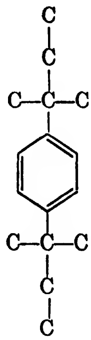
* $\frac{dD}{dt} = -0.00077953/°C$ (0 to 30°C)

† $\frac{dn}{dt} = -0.00044235/°C$ (16 to 30°C)

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5-Triisopropylbenzene 				
118.1–118.8 [46]	236–236.5 [18] 233.5–234.5 [5]	0.8447 [46] 0.8466 30° [46]	1.4882 [46] 1.4836 30° [46]	
1,3,5-Trimethyl-2,4,6-triethylbenzene 				
	238–247 [52]			
$C_{16}H_{26}$				
2-Phenyldecane 				
	131–132 3 [69,70,71]	0.8629 0.861 [70] 0.8623 22° [71] 0.862 19° [69] 0.877 0° [69] 0.8776 0° [71]	1.4856 22.0° [69,70,71]	
$* \frac{dD}{dt} = -0.0007242/°C$ (0 to 22°C)				
1-Phenyl-3,7-dimethyloctane 				$[\alpha]_D^{11.5} = -1.82°$ [32]
	275 [32] 140 8.5 [32]	0.8789 10.5° [32]	1.4960 10.5° [32]	

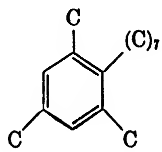
	M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
3-Propyl-3-phenylheptane 		140–141 15[19]	0.8694[19]	1.4924 15°[19]	
2,4,6-Trimethyl-4-phenylheptane 		143–144 18[19]	0.8753[19]	1.49497 15°[19]	
1-Methyl-4-*n*-nonylbenzene 		160–161 12[20]			
1,3-Dipentylbenzene 		265[2]	0.8868 0°[2]		
1,4-Di-*sec*-pentylbenzene 		265[48] 141–146 20[72]	0.863[72] 0.8496 25°[48]	1.495[72] 1.4845 25°[48]	

1,4-Di-*tert*-pentylbenzene



M. P., °C	B. P., °C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
	260 [48]	0.8491	25° [48]	1.4841 [48]		

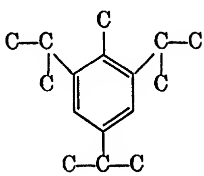
1,3,5-Trimethyl-2-heptylbenzene (a)



M. P., °C	B. P., °C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
	271–272 750 [32A] 157–158 15 [32A]	0.8753	17° [32A]	1.4970	17° [32A]	

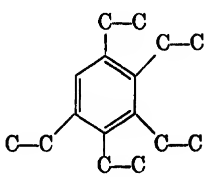
(a) The structure of the heptyl group is not given.

1-Methyl-2,4,6-triisopropylbenzene



M. P., °C	B. P., °C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
	252–253 757 [10]	0.8695 [10]		1.4995 [10]		

Pentaethylbenzene



M. P., °C	B. P., °C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
	277 [23,37]	0.8336	107.9° [14]	1.48803	$n_{H\alpha}^{107.9}$ [14]	
		0.8963	20.3° [14]	1.52700	$n_{H\alpha}^{20.3}$ [14]	
		0.8985	D_{19}^{19} [23]	1.47476	$n_{H\beta}^{107.9}$ [14]	
				1.51270	$n_{H\beta}^{20.3}$ [14]	

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

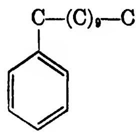
Dimethyltetraethylbenzene (a)

	123–126	0.15 [66A]	0.8771 [66A]		1.4958 [66A]		
			0.8762	19° [66A]	1.4971	19° [66A]	
			0.8804	15° [66A]	1.4994	15° [66A]	

(a) The structure of this compound is not given.

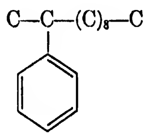
$C_{17}H_{28}$

***n*-Undecylbenzene**



	296 ± 1 [45]				1.4824	$n_{H\alpha}^{20}$ [45]	

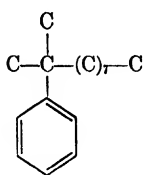
2-Phenylundecane



			0.8599				
	142–146	6 [69,70,71]	0.860 [70]		1.4829	18.7° [69,70,71]	
			0.857	23.5° [69]			
			0.8572	23.5° [71]			
			0.875	0° [69]			
			0.8755	0° [71]			

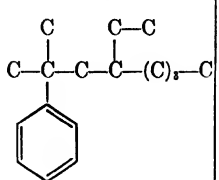
$* \frac{d\dot{D}}{dt} = -0.00077587/°C$ (0 to 24°C)

2-Methyl-2-phenyldecane

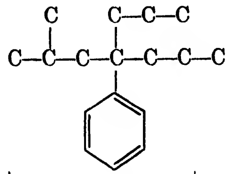
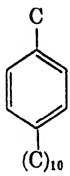
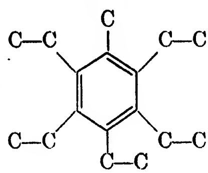
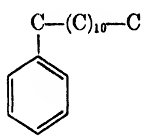


	160	20 [83]	0.8676 [83]		1.48594 [83]		

2-Methyl-2-phenyl-4-ethyloctane



	149	20 [83]	0.8620 [83]		1.487749 [83]		

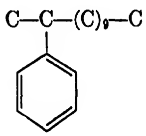
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Methyl-4-propyl-4-phenylheptane 				
	143–144 11[19]	0.8750 16°[19]	1.496 13°[19]	
1-Methyl-4-decylbenzene 				
-11.5[61]	169–169.5 11[61]	0.8549[61]	1.4854[61]	
Methylpentaethylbenzene 				
43[12]	294[12]			
$C_{18}H_{30}$				
***n*-Dodecylbenzene** 				
		0.8568	**1.4844**	
—3[26]	179–180 13[51]	0.8564[58,60]	1.4822[58,60]	
-7[51]	183–185 12[60]	0.8013 100.0°[26]	1.4847[26]	
	172–173 9[26,27]	0.8084 89.8°[26]	1.4786 35°[26]	
		0.8225 69.0°[26]	1.4806 30°[26]	
		0.8295 59.0°[26]	1.4826 25°[26]	
		0.8356 49.8°[26]	1.47431 17°[51]	
		0.8419 40.6°[26]	1.4877 13°[26]	
		0.8502 30°[60]		
		0.8496 29.9°[26]		

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}		n_D^{20}	Additional Data
n-Dodecylbenzene *(Continued)*		0.8562	21.1° [26]		
		0.8598	D_{21}^{21} [51]		
		0.8607	15.5° [27]		
		0.8636	10.5° [26]		

$* \frac{dD}{dt} = -0.0006966/°C$ (10 to 100°C)

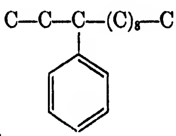
$\dagger \frac{dn}{dt} = -0.0003959/°C$ (13 to 35°C)

2-Phenyldodecane



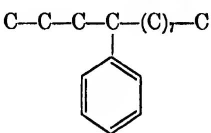
M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}	Additional Data
	182–184	20 [72]	0.855 [72]		1.4818 [72]	
	143	1.8 [59]	0.8402	40° [59]	1.4849 [59]	
			0.8488	30° [59]		

3-Phenyldodecane



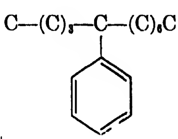
M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}	Additional Data
	127	0.8 [59]	0.8376	40° [59]	1.4829 [59]	
			0.8466	30° [59]		

4-Phenyldodecane

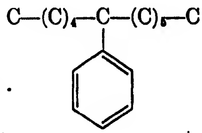
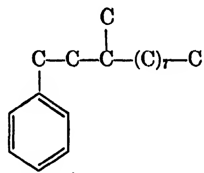
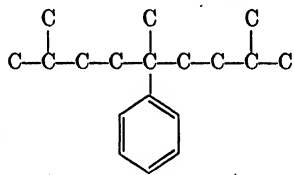
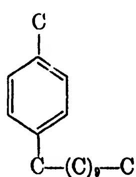
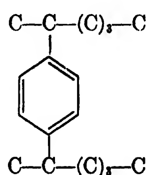


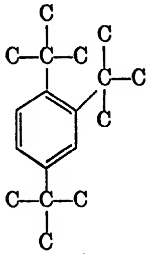
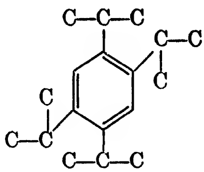
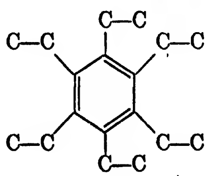
M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}	Additional Data
	140–142	0.6 [59]	0.8407	40° [59]	1.4850 [59]	
			0.8489	30° [59]		

5-Phenyldodecane



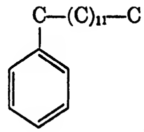
M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}	Additional Data
	113	0.4 [59]	0.8406	40° [59]	1.4850 [59]	
			0.8485	30° [59]		

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
6-Phenyldodecane 				
	108 0.4 [59]	0.8392 40° [59] 0.8477 30° [59]	1.4852 [59]	
1-Phenyl-3-methylundecane 				
	143–145 2 [39]	0.8590 23.5° [39]	1.4852 24.5° [39]	$[\alpha]_D^{23.5} = -1.31°$ [39]
2,5,8-Trimethyl-5-phenylnonane 				
	153–155 15 [19]	0.8728 [19]	1.49326 15° [19]	
1-Methyl-4-*n*-undecylbenzene 				
	171–172 12 [20]			
1,4-Di-*sec*-hexylbenzene 				
	104–106 0.3 [66]	0.914 [66]	1.5020 [66]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4-Tri-*tert*-butybenzene 				
128[33,62,65]	291–292 736.6[62]			
1,2,4,5-Tetraisopropylbenzene 				
118.4				
119–119.4[21]	260 775[5]	0.758 150°[33]		
119[64]	169 70[30]	0.770 135°[33]		
118.5[33]	133 17[30]			
118[15,30]				
117–118[6,78]				
117[5]				
Hexaethylbenzene 				
128.3	**297.2**			
130[12,57]	298–299[24]	0.8550[38]	1.47357 $n_{H\alpha}^{130.4}$[14]	
129[23,33,49,78]	298–298.5[73]	0.814 150°[33]	1.48686 $n_{H\beta}^{130.4}$[14]	
128–129[41]	298[33,87]	0.824 135°[33]		
127[22,38,77]	296.5[12]	0.8305 130.4°[14]		
126–127[76]	294[5]	0.997 0°[82]		
126.5[42]				
126[11,16,24,78]				

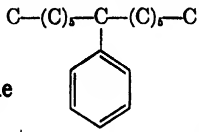
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

***n*-Tridecylbenzene**



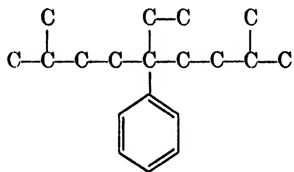
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	188–189.5	10 [81]					

7-Phenyltridecane



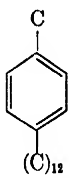
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	183–184	20 [50]	0.8604	D_{50}^{50} [50]	1.49307	18° [50]	
			0.8723	D_{20}^{20} [50]			

2,8-Dimethyl-5-ethyl-5-phenylnonane



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	170–172	14 [19]	0.8955	18.5° [19]	1.50735	15° [19]	

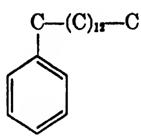
1-Methyl-4-dodecylbenzene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
5 [61]	155.5	1.5 [61]	0.8560 [61]		1.4845 [61]		

$C_{20}H_{34}$

***n*-Tetradecylbenzene**



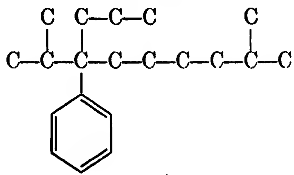
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8565		**1.4812**		
8.6 [26]	195–196	9 [26,27]	0.8559 [58,60]		1.4813 [58,60]		
	153	0.5 [60]	0.8567 [26]		1.4844 [26]		
			0.8012	101.9° [26]	1.4724	50° [26]	
			0.8078	91.9° [26]	1.4763	40° [26]	
			0.8142	82.4° [26]	1.4805	30° [26]	

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
n-Tetradecylbenzene (*Continued*)			0.8223	70.0° [26]	1.4824	25° [26]	
			0.8300	59.7° [26]	1.4875	12.3° [26]	
			0.8359	49.9° [26]			
			0.8427	39.5° [26]			
			0.8496	30° [60]			
			0.8500	29.5° [26]			
			0.8605	15.5° [27]			
			0.8629	10.7° [26]			

* $\frac{dD}{dt} = -0.0006791/°C$ (10 to 102°C)

† $\frac{dn}{dt} = -0.0003940/°C$ (12 to 50°C)

2,8-Dimethyl-3-propyl-3-phenylnonane



M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
	180–181	15 [19]	0.8677 [19]		1.48751	15° [19]	

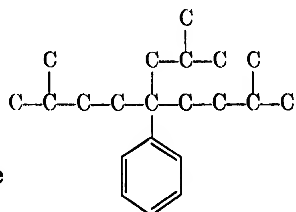
Diheptylbenzene (a)

M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
	163–165	9 [70]	0.853	21.5° [70]	1.4819	25° [70]	

(a) The structure of this compound is not given.

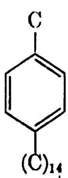
$C_{21}H_{36}$

2,8-Dimethyl-5-isobutyl-5-phenylnonane



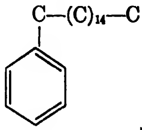
M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
	172–173	11 [19]	0.89817 [19]		1.50623	15° [19]	

1-Methyl-4-tetradecylbenzene



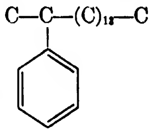
M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
16.8 [61]	170	0.8 [61]	0.8560 [61]		1.4839 [61]		

n-Hexadecylbenzene
(n-Cetylbenzene)



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
27[34,35]	235–237	16[13]	0.8558[58,60]		1.4814[58,60]		
22 15mm[1]	230	15[34,35]	0.877[70]		1.452	92°[74]	
	171	0.1[60]	0.8079	99.2°[35]	1.47986	21.8°[13]	
	136–137	0[36]	0.8493	30°[60]	1.47677	$n_{H\alpha}^{21.8}$ [13]	
			0.8567	27°[35]	1.48750	$n_{H\beta}^{21.8}$ [13]	
					1.49409	$n_{H\gamma}^{21.8}$ [13]	

2-Phenylhexadecane



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	191–194	9[69,70,71]	0.864[69,70]		1.4839	18.8°[69,70,71]	
			0.8640	20.5°[71]			
			0.8805	0°[71]			

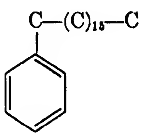
Dioctylbenzene (a)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	338–343[21]						

(a) The structure of this compound is not given.

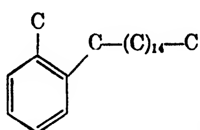
$C_{23}H_{40}$

n-Heptadecylbenzene

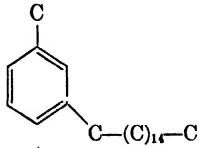
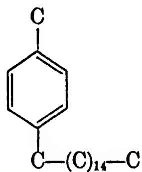


M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
38[81]							

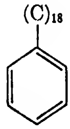
1-Methyl-2-n-hexadecylbenzene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
8–9[35]	238.5–239	15[35]	0.8072	99°[35]			
			0.8676	9.2°[35]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20} †	Additional Data
1-Methyl-3-*n*-hexadecylbenzene 				
11–12[35]	236.5–237 15[35]	0.8029 99.3°[35]		
		0.8617 11°[35]		
1-Methyl-4-*n*-hexadecylbenzene 				
27.5[35]	239.5–240 15[35]	0.8027 99°[35]		
		0.8499 27.5°[35]		

$C_{24}H_{42}$

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Octadecylbenzene (a) 				
34.3		**0.8568**	**1.4812**	
36.5[38]	249 15[34]	0.8563[68]	1.4826[68]	
35–36[43,44]	183 3[68]	0.8566[68]	1.4828[68]	
32.8[75]	180–181 3[68]	0.8224 71.5°[75]	1.4600 73.5[75]°	
32[34]	147 0[36]	0.8437 41°[75]	1.4640 63°[75]	
30[68]		0.8439 40°[38]	1.4730 40°[75]	
25–26[68]			1.4745 36°[75]	
29 15mm[1]			1.4768 30°[75]	
			1.4778 27°[75]	
			1.4812 25°[43]	

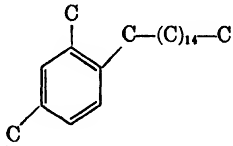
* $\frac{dD}{dt} = -0.0006611/°C$ (20 to 72°C)

† $\frac{dn}{dt} = -0.0004012/°C$ (20 to 74°C)

(a) The data tabulated may be for different isomers. The structure of the octadecyl group was given only for the compound referred to in reference 38. This structure is *n*-octadecylbenzene.

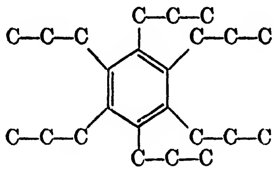
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

1,5-Dimethyl-2-*n*-hexadecylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
33.5 [35]	249.5–250	15 [35]	0.8062	99.4° [35]			
	149	0 [36]	0.8495	33.5° [35]			

Hexa-*n*-propylbenzene

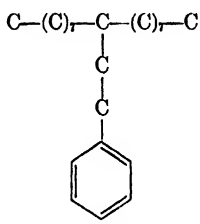


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8185	**100°**			
103.0 [17]	332.2 [17]		0.7312	220° [17]			
101 [78]	278.0	200 [17]	0.7457	200° [17]			
	253.5	100 [17]	0.7821	150° [17]			
	231.1	50 [17]	0.8112	110° [17]			
	204.3	20 [17]	0.8163	103° [17]			
	185.8	10 [17]					

* $\frac{dD}{dt} = -0.0007275/°C$ (100 to 220°C)

$C_{25}H_{44}$

9-Phenethylheptadecane



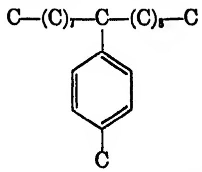
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8560		**1.4806**		
−26.7 [55,56]	189.0	1.00 [55]	0.8558 [55,56]		1.4806 [55,56]		
	189	1.00 [56]	0.8038	98.9° [56]	1.4729	40.0° [56]	
	176	0.50 [56]	0.8298	60° [56]	1.4767	30.0° [56]	
			0.8439	37.8° [56]			
			0.8697	0° [56]			

* $\frac{dD}{dt} = -0.0006712[1+0.0003912(t-20)]/°C$ (0 to 99°C)

† $\frac{dn}{dt} = -0.0003850/°C$ (20 to 40°C)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

9-*p*-Tolyloctadecane

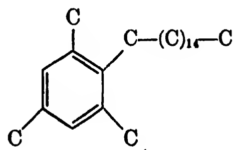


M. P., °C	B. P., °C	mm	D_4^{20}	°C	n_D^{20}	°C	Additional Data
			0.8549		**1.4811**		
	185	1.0 [7]	0.8549 [7,55]		1.4811 [7,55]		
	173	0.5 [7]	0.8024	98.9° [7]	1.4734	40.0° [7]	
			0.8283	60° [7]	1.4771	30.0° [7]	
			0.8433	37.8° [7]			
			0.8681	0° [56]			

$* \frac{dD}{dt} = -0.0006648/°C$ (0 to 99°C)

$† \frac{dn}{dt} = -0.0003850/°C$ (20 to 40°C)

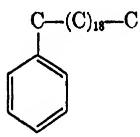
1,3,5-Trimethyl-2-*n*-hexadecylbenzene



M. P., °C	B. P., °C	mm	D_4^{20}	°C	n_D^{20}	°C	Additional Data
40 [35]	258–258.5	15 [35]	0.8065	99.2° [35]			
	154–155	0 [36]	0.8452	40° [35]			

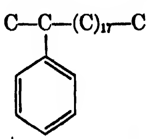
$C_{26}H_{46}$

1-Phenyleicosane



M. P., °C	B. P., °C	mm	D_4^{20}	°C	n_D^{20}	°C	Additional Data
42.3 [55]	212.0	1.00 [55]	0.8039	98.9° [55]	1.4725	40.0° [55]	
	197.5	0.50 [55]	0.8235	60° [55]			

2-Phenyleicosane

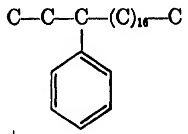


M. P., °C	B. P., °C	mm	D_4^{20}	°C	n_D^{20}	°C	Additional Data
			0.8547		**1.4795**		
29.0 [55]	204.5	1.00 [55]	0.8027	98.9° [55]	1.4795 [55]		
	190.0	0.50 [55]	0.8283	60° [55]	1.4721	40.0° [55]	
			0.8430	37.8° [55]	1.4758	30.0° [55]	

$* \frac{dD}{dt} = -0.0006594/°C$ (20 to 99°C)

$† \frac{dn}{dt} = -0.000370/°C$ (20 to 40°C)

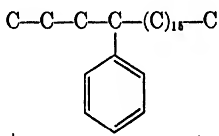
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
3-Phenyleicosane							
			0.8546		**1.4796**		
29.3[55,56]	202	1.00[56]	0.8032	98.9°[56]	1.4796[55,56]		
	188	0.50[56]	0.8282	60°[56]	1.4720	40.0°[56]	
			0.8432	37.8°[56]	1.4758	30.0°[56]	



$* \frac{dD}{dt} = -0.0006533/°C$ (20 to 99°C)

$\dagger \frac{dn}{dt} = -0.000380/°C$ (20 to 40°C)

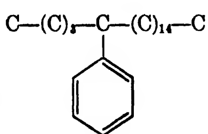
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
4-Phenyleicosane							
			0.8546		**1.4794**		
31.4[55]	199.0	1.00[55]	0.8028	98.9°[55]	1.4794[55]		
	184.5	0.50[55]	0.8281	60°[55]	1.4718	40.0°[55]	
			0.8430	37.8°[55]	1.4756	30 0°[55]	



$* \frac{dD}{dt} = -0.0006571/°C$ (20 to 99°C)

$\dagger \frac{dn}{dt} = -0.000380/°C$ (20 to 40°C)

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
5-Phenyleicosane							
			0.8549		**1.4796**		
30.2[55,56]	197	1.00[56]	0.8015	98.9°[56]	1.4796[55,56]		
	184	0.50[56]	0.8275	60°[56]	1.4720	40.0°[56]	
			0.8430	37.8°[56]	1.4757	30.0°[56]	

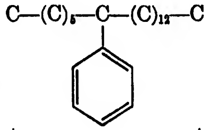


$* \frac{dD}{dt} = -0.0006780/°C$ (20 to 99°C)

$\dagger \frac{dn}{dt} = -0.000380/°C$ (20 to 40°C)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

7-Phenyleicosane

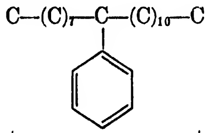


M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8535		**1.4794**		
16.4 [55,56]	196	1.00 [56]	0.8535 [55,56]		1.4794 [55,56]		
	183	0.50 [56]	0.8014	98.9° [56]	1.4717	40.0° [56]	
			0.8272	60° [56]	1.4756	30.0° [56]	
			0.8417	37.8° [56]			

* $\frac{dD}{dt} = -0.0006599/°C$ (20 to 99°C)

† $\frac{dn}{dt} = -0.000385/°C$ (20 to 40°C)

9-Phenyleicosane



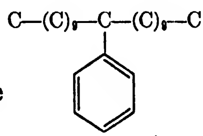
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8534		**1.4790**		
17.9 [55,56]	196	1.00 [56]	0.8530 [55,56]		1.4790 [55,56]		
	183	0.50 [56]	0.8011	98.9° [56]	1.4713	40.0° [56]	
			0.8268	60° [56]	1.4751	30.0° [56]	
			0.8422	37.8° [56]			

* $\frac{dD}{dt} = -0.0006619/°C$ (20 to 99°C)

† $\frac{dn}{dt} = -0.000385/°C$ (20 to 40°C)

$C_{27}H_{48}$

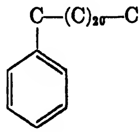
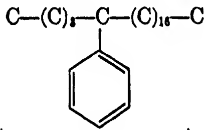
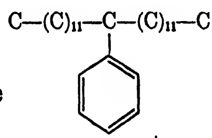
11-Phenylheneicosane



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.8531		**1.4788**		
20.8 [7,55,80]	205	1.0 [7]	0.8531 [7,55,80]		1.4788 [7,55,80]		
	204	1.0 [80]	0.8018	98.9° [7]	1.4713	40.0° [7]	
	191	0.5 [7]	0.8270	60° [7]	1.4751	30.0° [7]	
			0.8415	37.8° [7]			

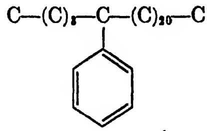
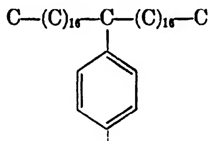
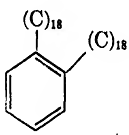
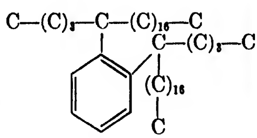
* $\frac{dD}{dt} = -0.0006502/°C$ (20 to 99°C)

† $\frac{dn}{dt} = -0.000375/°C$ (20 to 40°C)

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Bombicestane (a)				
79 [28]				
(a) No clue to the structure of this compound is given.				
$C_{28}H_{50}$				
***n*-Docosylbenzene** 				
42–44 [43]			1.4806 25° [43]	
5-Phenyldocosane 				
38 [43,44]	200–201 1 [44]	0.8554 25° [43]	1.4777 25° [43]	
$C_{29}H_{52}$				
Ingostane (a)				
75 [29]				
(a) No clue to the structure of this compound is given.				
$C_{31}H_{56}$				
13-Phenylpentacosane 				
		0.8537	**1.4787**	
31.7 [55,56]	235 1.00 [56]	0.8030 98.9° [56]	1.4787 [55,56]	
	220 0.50 [56]	0.8278 60° [56]	1.4713 40.0° [56]	
		0.8424 37.8° [56]	1.4750 30.0° [56]	

* $\frac{dD}{dt} = -0.0006440/°C$ (20 to 99°C)

† $\frac{dn}{dt} = -0.000370/°C$ (20 to 40°C)

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
5-Phenylhexacosane 						
32–33 [43]		0.8532	25° [43]	1.4787	25° [43]	
$C_{41}H_{76}$						
18-Phenylpentatriacontane 						
61–62 [67]						
$C_{42}H_{78}$						
1,2-Dioctadecylbenzene 						
69–70 [43]						
$C_{50}H_{94}$						
1,2-Di-(5′-docosyl)-benzene 						
64–66 [43]		0.847 [43]				
$C_{60}H_{114}$						
Trioctadecylbenzene (a)						
46.5–47 [43]		0.8520	25° [43]	1.4813	25° [43]	

(a) The structure of this compound is not given.

$C_{15}H_{24}$-$C_{60}H_{114}$ References

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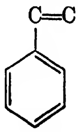
3. BENZENE WITH ONE ALKENYL SUBSTITUTION, C_nH_{2n-8}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Styrene (Ethenylbenzene) (Cinnamene) (Vinylbenzene)				*
−30.6	**145.3**	**0.90675**	**1.5465**	
−30.5 [15]	146.2 [64]	0.9031 [37]	1.5450 [17]	
−30.60(a) [49,66]	146 [8,9,25,27,54,60]	0.9056 [66]	1.5450(c) [11]	
−31.9 [20]	145.5–146 [6,30]	0.9065 [17]	1.5463 ± 0.0002 [35]	
−32 [54]	145–146 [34,43]	0.9074 [12,14]	1.54633 [50]	
−33 [50,63]	144–146 [7,32]	0.9090 [50,63]	1.5469 [49]	†
−33.3 [48]	145.99 [20]	0.7909 145° [66]	1.5470 [15]	
	145–145.8 [63]	0 7926 143° [45]	1.5446 24° [47]	
	145.5 [39]	0.8138 120° [66]	1.5440 23° [44]	
	144–145.5 [14]	0.8322 100° [66]	1.5446 21.0° [22,42]	
	145.0–145.4 [16]	0.8506 80° [66]	1.54633 20.05° [63]	
	145.2 [66]	0.8689 60° [66]	1.54486 19.9° [56]	
	145(b)	0.8873 40° [66]	1.5472 19° [26]	
	144–145 [24,28,38,59,65]	0.8938 37.8° [20]	1.54849 16.6° [56]	
	144.5 [51]	0.8998 25° [25]	1.5488 13° [29]	
	144–144.5 [13,19]	0.9010 25° [66]	1.50433 $n_{H\alpha}^{75}$ [40]	
	144 [17,52]	0.9038 23° [44]	1.53022 $n_{H\alpha}^{25}$ [40]	
	143.8 [62]	0.9080 21.1° [20]	1.53983 $n_{H\alpha}^{20.05}$ [63]	‡
	145–146 761 [56]	0.9083 D_{20}^{20} [26]	1.53666 $n_{H\alpha}^{20}$ [51]	
	146 759 [29]	0.9073 19.9° [56]	1.54030 $n_{H\alpha}^{20}$ [12]	
	143.9–144.4 753 [26]	0.9074 18.5° [18]	1.53782 $n_{H\alpha}^{19.9}$ [56]	
	143.5–145.5 745 [33]	0.90595 17° [39]	1.53699 $n_{H\alpha}^{17}$ [39]	
	76.2–76.7 80 [41]	0.9072 17° [61]	1.54191 $n_{H\alpha}^{16.6}$ [56]	
	73–74 73 [7]	0.9103 16.6° [56]	1.53853 $n_{H\alpha}^{13.15}$ [55]	
	68 61 [53]	0.9085 16° [7]	1.52180 $n_{H\beta}^{75}$ [40]	
	69.5–70.0 60 [48]	0.9127 15.6° [20]	1.54677 $n_{H\beta}^{25}$ [40]	
	65.6 50 [15]	0.9074 15° [13]	1.5615 $n_{H\beta}^{21.0}$ [22]	§
	65.15 50 [15]	0.911 15° [6]	1.56377 $n_{H\beta}^{20.05}$ [63]	
	60.0 45.002 [20]	0.9121 13° [29]	1.56312 $n_{H\beta}^{20}$ [12]	
	57–58 32 [21]	0.9240 0° [66]	1.55569 $n_{H\beta}^{19.9}$ [56]	
	52.4 31 [1]	0.9251 0° [64]	1.56036 $n_{H\beta}^{17}$ [39]	
	54 30 [17]	0.9259 0° [20]	1.56593 *$n_{H\beta}^{16.6}$ [56]	
	53–54 29 [28]	0.9297 −4.4° [20]	1.56184 $n_{H\beta}^{13.15}$ [55]	
	52–53 28 [44]	0.9410 −17.8° [20]	1.57888 $n_{H\gamma}^{20}$ [12]	
	48.4 22 [58]		1.57249 $n_{H\gamma}^{19.9}$ [56]	
	43 17 [6]		1.57588 $n_{H\gamma}^{17}$ [39]	
	40 14 [56,57]		1.58163 $n_{H\gamma}^{16.6}$ [56]	
	40 13 [36]			
	37.8 12.117 [20]			
	36 12 [43]			

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
Styrene	34.2	10 [57]		1.57729 $n_{H\gamma}^{18.15}$ [55]	
(Continued)	33	10 [29]		(d)	
	21.1	4.589 [20]			
	8.2	2.16 [31]			
	0	1.189 [20]			
	−0.5	1.13 [31]			
	−7.7	0.65 [31]			

* $\frac{1}{T_b} = 0.0036886 - 0.0004284 \log_{10} p_{mm}$ (0.65 to 80 mm)

† $\frac{dD}{dt} = -0.0008954[1 + 0.0006252(t - 20)]/°C$ (−18 to 145°C)

‡ $\frac{dD}{dt} = -0.0008739/°C$ (0 to 40°C)

§ $\frac{dn}{dt} = -0.0005186/°C$ (13 to 25°C)

(a) This figure is given as a freezing point in the literature.
(b) The boiling point 145 is found in references 2, 3, 4, 5, 46, 50.
(c) This refractive index is the average of two or more determinations.
(d) Refractive indices at other lines may be found in references 10, 22.

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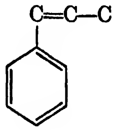
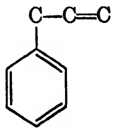
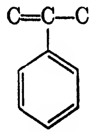
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Propen-1-ylbenzene 							*
	173.5		**0.9105**				
20[36]	176–177[39,52,78]		0.9070[49]		1.5420[10]		
	176[22,53]		0.9088[10]		1.5432[33]		
	174–176[61]		0.913[37]		1.549[72]		
	174–175.25[32]		0.9130[35]		1.5492[30]		
	175[5,67]		0.914[72]		1.5493[64]		
	174–175[68]		0.9141[8,30]		1.5494[8]		
	172–175[1]		0.9078	26°[30]	1.550[37]		
	174[9,50]		0.9083	26°[30]	1.54967	18.7°[74]	
	172–174[35]		0.9076	D_{25}^{25}[52]	1.55069	17°[49]	
	173[37]		0.90902	D_0^{23}[1]	1.5482	14°[29]	
	171–172[43]		0.9109	D_{20}^{20}[52]	1.5497	12°[30]	
	170–171[2,55]		0.9083	19°[26]	1.558	7°[54]	
	169–171[77]		0.9145	18.7°[74]	1.54257	$n_{H\alpha}^{18.7}$[74]	
	167–170[14,33,34]		0.9188	15°[3]	1.56600	$n_{H\beta}^{18.7}$[74]	
	167[16]		0.9143	D_{15}^{15}[52]	1.5803	$n_{H\gamma}^{18.7}$[74]	
	177	756[30]	0.9151	13°[30]			
	172–173	754[15]	0.9181	12°[30]			
	173–175	750[3]	0.9181	D_{10}^{10}[52]			
	166.7	746[10]	0.918	7°[54]			
	73	20[49]	0.922	D_5^5[52]			
	72–74	15[29]	0.9230	D_4^4[52]			
	72–73	15[48]	0.9253	0°[30]			
	68	15[72]					
	74	13[26]					
	71	13[63]					
	67 5	13[75]					
	65.5	13[74, 75]					
	65	13[64]					
	63.5	13[37]					
	68	12[34]					
	66–67	12[40]					
	69-70	11[35]					
	65–70	10[34]					
	64–65	10[17]					
	61	10[49]					

$* \frac{dD}{dt} = -0.0007588/°C$ (0 to 26°C)

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Propen-2-ylbenzene (Allylbenzene) 							
	156.3						
−40[36]	157–160[1]		0.8929[8]		1.5118[64]		
	158–159[3]		0.8930[23]		1.5126[23]		
	157–159[24]		0.893[36,37]		1.514[37]		
	156–159[46]		0.8812	25°[46]	1.5143[8,68]		
	157[7,37]		0.8929	$D_0^{20.5}$ [1]	1.5042	25°[46]	
	156–157[20,32,44,68]		0.9012	15°[68]	1.5126	21.7°[32]	
	156[5,38,56]		0.9018	14.5°[3]	1.5137	21.5°[56]	
	155–156[6]		0.90706	D_0^0 [1]	1.52002	14.5°[3]	
	155[9,11,22,67]						
	155–157	750[4]					
	154	730[54]					
	153–154	725[21]					
	52–55	16[42]					
	50	16[36]					
	47	13[36,37]					
Isopropenylbenzene 							
	161.6		**0.9096**		**1.5363**		
	162–165[63,74]		0.908[71]		1.535[71]		
	162–164[70]		0.9115[12]		1.5364[74]		
	161–163[28]		0.9044	24°[28]	1.5350	22°[59]	
	162[27]		0.9070(a)	D_{22}^{22} [59]	1.5370	22°[59]	
	161–162[66]		0.9085	21°[66]	1.5371	22°[59]	
	160–162[67]		0.9142	D_{20}^{20} [12]	1.53492	19.8°[74]	
	160–161[2]		0.9078	19.8°[74]	1.5377	19°[40]	
	160[25]		0.9125	19°[40]	1.5385	19°[59]	
	165	764[45]	0.9134	17.4°[74]	1.53842	17.4°[74]	
	163	761[59]	0.9165	9.6°[18,19]	1.54207	9.6°[18,19]	
	164–165	754[40]	0.9231	0°[67]	1.52893	$n_{H\alpha}^{19.8}$ [74]	
	163–164	752[73]	0.9278	0°[66]	1.53257	$n_{H\alpha}^{17.4}$ [74]	
	162	752[59]	0.92725(a)	D_0^0 [12]	1.54959	$n_{H\beta}^{19.8}$ [74]	
	164	749[65]			1.55353	$n_{H\beta}^{17.4}$ [74]	
	158–160	748[18,19]			1.56284	$n_{H\gamma}^{19.8}$ [74]	
	159–160	744[59]			1.56637	$n_{H\gamma}^{17.4}$ [74]	
	160–162	743[59]					
	106	126[19]					

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

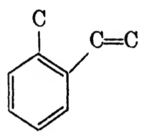
Isopropenylbenzene
(Continued)

M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
	68–69	27[66]					
	66	21.5[76]					
	65	20[76]					
	61–62	18[28]					
	60.5–61.5	18[12]					
	60–62	17[12]					
	60–61	17[66]					
	55–60	15[66]					
	56	15[71]					
	54.5–55.0	14[75]					
	54–55	14[74]					
	56	13[12]					
	50.0–50.5	11[75]					

* $\frac{dD}{dt} = -0.0008111/°C$ (0 to 24°C)

† $\frac{dn}{dt} = -0.00056115/°C$ (9 to 22°C)

(a) This density is the average of two or more determinations.

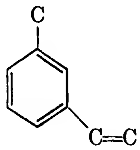
1-Methyl-2-ethenylbenzene 

M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
					1.5447		
	169	752[13]	0.8912	D_{24}^{24}[62]	1.54505(a)[71]		
	168	746[13]	0.9155	14.1°[71]	1.5425	24°[62]	
	61–62	18[57]	0.9161	13.4°[71]	1.54765	14.1°[71]	
	59	15[71]	0.9168	13.25°[71]	1.54817	13.25°[71]	
	55.4	12[71]	0.9174	12.55°[71]	1.54175	$n_{H\alpha}^{14.1}$[71]	
	51	9[62]			1.54219	$n_{H\alpha}^{13.25}$[71]	
					1.56444	$n_{H\beta}^{14.1}$[71]	
					1.56499	$n_{H\beta}^{13.25}$[71]	
					1.57904	$n_{H\gamma}^{14.1}$[71]	
					1.58003	$n_{H\gamma}^{13.25}$[71]	

* $\frac{dn}{dt} = -0.0005117/°C$ (13 to 24°C)

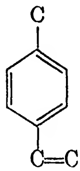
(a) This refractive index is the average of two determinations.

1-Methyl-3-ethenylbenzene



M. P., °C	B. P., °C @ 760mm		D^{20}_4		n^{20}_D		Additional Data
	164 [47]		0.9044	D^{24}_{24} [62]	1.54	24° [62]	
	61–62	18 [69]					
	52–53	9 [62]					

1-Methyl-4-ethenylbenzene



M. P., °C	B. P., °C @ 760mm		D^{20}_4		n^{20}_D		Additional Data
	170–175 [60]		0.8813	25° [51]	1.52336	25° [51]	
	170–173 [58]		0.8974	D^{24}_{24} [62]	1.5395	24° [62]	
	166–167	724 [17]	0.896	D^{20}_{20} [41]	1.54465	16.4° [73]	
	77–79	33 [73]	0.8974	18° [26]	1.54474	16.3° [73]	
	69–70	20 [51]	0.9003	16.4° [73]	1.5306	16° [31]	
	65–66	19 [73]	0.9010	16.3° [73]	1.53811	$n^{16.4}_{H\alpha}$ [73]	
	63	15 [31]	0.9011	16.2° [73]	1.53820	$n^{16.3}_{H\alpha}$ [73]	
	60	12 [26]	0.8978	16° [31]	1.56200	$n^{16.4}_{H\beta}$ [73]	
	59–60	12 [69]			1.56208	$n^{16.3}_{H\beta}$ [73]	
	51	10 [62]			1.57784	$n^{16.4}_{H\gamma}$ [73]	
					1.57797	$n^{16.3}_{H\gamma}$ [73]	

C_9H_{10} References

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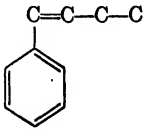
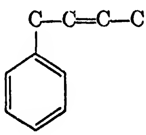
Buten-1-ylbenzene



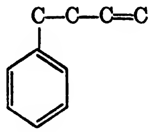
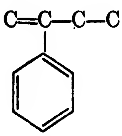
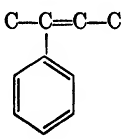
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	188.9						
	190–193 [46]		0.9106 [58]		1.5387 [58]		
	188–190 [41]		0.9097	19° [72]	1.54019	19.4° [72]	
	189 [36]		0 9124	16° [36]	1.5381	16° [46]	
	188–189 [1]		0.9065	13° [41]	1.5414	16° [36]	
	89–90	15 [36]	0.907	11° [56]	1.550	11° [56]	
	81.7–82.7	12.5 [72]	0.9277	D_0^4 [46]	1.53401	$n^{19.4}_{H\alpha}$ [72]	
	85	12 [18]			1.55615	$n^{19.4}_{H\beta}$ [72]	
	80	12 [56]			1.57083	$n^{19.4}_{H\gamma}$ [72]	
	78	12 [15]					
	76–78(a)	12 [51]					
	73–74.5(b)	12 [51]					
	77	10 [58]					
	83	9 [50]					
	70–71	8 [41]					

(a) This constant was determined on the *trans* isomer.
(b) This constant was determined on the *cis* isomer.

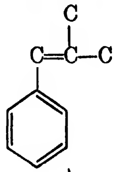
Buten-2-ylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	176.2						
	176–178 [36]		0.8831 [58]		1.5101 [44,58]		
	175–177 [63]		0.9006 [45]		1.5157	19° [75]	
	176 [10]		0.9033 [44]		1.5109	15° [36]	
	176	765 [36]	0.9069	19° [75]			
	177–178	754 [2]	0.8857	15° [36]			
	81–82	21 [73]	0.8991	0° [2]			
	76	18 [36]					
	76–77.5	16 [73]					
	72–73	13 [2]					
	70	12 [15]					
	61–63	12 [75]					
	68	10 [58]					
	65.6–66	4 [45]					

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Buten-3-ylbenzene							
	177.2						
	177–178 [48,49]		0.8831 [58]		1.5059 [58,61]		
	176–178 [4,5]		0.8915 [44]		1.5064 [44]		
	175–178 [26,27]		0.8878	17° [37]	1.5090 [26]		
	177 [57]		0.901	15.5° [4]	1.5073	21.5° [57]	
	175–177 [19]		0.9015	15.5° [5]	1.5078	17° [37]	
	176–178	758 [3]					
	73	18 [12]					
	73–76	14 [1]					
	72–73	13 [61]					
	62.5	13 [44]					
	65	12 [66]					
	65	11 [37]					
	64	10 [58]					
2-Phenylbutene-1							
	81–82	20 [28]					
2-Phenylbutene-2							
	189.3						
	191–193 [33]		0.9041 [30]		1.534 [69]		
	188–191 [34]		0.909 [69]		1.52990	25° [23]	
	186–191 [6]		0.8911	25° [23,24]	1.5293	25° [61]	
	187–190 [25]		0.909	22° [34]	1.5288	22° [34]	
	187–189 [71,72]		0.9088	19.7° [71]	1.5299	21° [30]	
	184–187	752.9 [30]	0.9095	19.7° [71]	1.53387	19.7° [71]	
	91	20 [73]	0.9286	19.6° [71]	1.53496	19.7° [71]	
	80–81	20 [23,34]	0.9221	15° [33]	1.51488	$n_{H\alpha}^{25}$ [23]	
	85.5–86.5	19 [73]			1.52833	$n_{H\alpha}^{19.7}$ [71]	
	83–84	19 [73]			1.52930	$n_{H\alpha}^{19.7}$ [71]	
	81–82	17 [34]					

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
2-Phenylbutene-2 *(Continued)*	78	15[69]			1.54785	$n_{H\beta}^{19.7}$ [71]	
	73	14[61]			1.54895	$n_{H\beta}^{19.7}$ [71]	
					1.56048	$n_{H\gamma}^{19.7}$ [71]	
					1.56172	$n_{H\gamma}^{19.7}$ [71]	

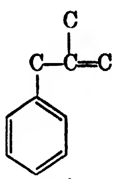
1-Phenyl-2-methylpropene-1 

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	185.5		**0.9019**				
	190[16]		0.9014	D_{25}^{25} [53]	1.5235[31]		
	187.3–188.3[53]		0.9047	D_{20}^{20} [53]	1.5280[35]		
	184–186[11]		0.9006	D_0^{20} [31]	1.5400[76]		
	181–183[25,74]		0.8986	19.6°[71]	1.5380	22°[76]	
	180–182[47,66,67]		0.9081	D_{15}^{15} [53]	1.5390	21.0°[53]	
	181[68]		0.9022	14.5°[35]	1.5400	20.4°[76]	
	179–181[65]		0.9116	D_{10}^{10} [53]	1.52733	19.6°[71]	
	181–182	761[35]	0.9154	D_5^5 [53]	1.53707	11°[20,21]	
	183–185	748[20,21]	0.9163	D_4^4 [53]	1.52185	$n_{H\alpha}^{19.6}$ [71]	
	189–192	747[31]	0.9172	0°[65]	1.54105	$n_{H\beta}^{19.6}$ [71]	
	101	50[76]			1.55357	$n_{H\gamma}^{19.6}$ [71]	
	100	50[76]			(a)		
	90	31[76]					
	79–80	20[76]					
	72	15[8]					
	63.5	10[9]					

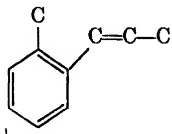
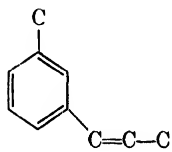
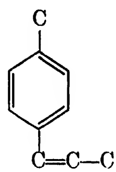
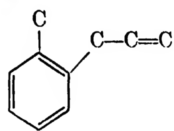
* $\frac{1}{T_b} = 0.0033897 - 0.0004218 \log_{10} p_{mm}$ (10 to 50 mm)

† $\frac{dD}{dt} = -0.0008420/°C$ (0 to 25°C)

(a) Refractive indices at other lines may be found in reference 53.

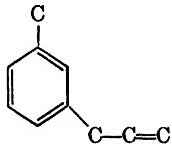
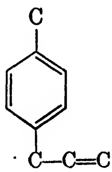
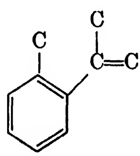
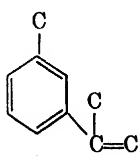
1-Phenyl-2-methylpropene-2 

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	69–70	20[76]			1.5080[76]		

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-2-(propen-1′-yl)-benzene				
	79.5 15[43]	0.9017[43]	1.5393[43]	
1-Methyl-3-(propen-1′-yl)-benzene				
	94.5 22[43]	0.8954[43]	1.5398[43]	
1-Methyl-4-(propen-1′-yl)-benzene				
	195–197[40] 196[39] 192[13,14] 195–197 758[42] 92–93 20[32] 83–85 10[39,40]	0.8896[42] 0.9057 13°[39,40]	1.5392[42] 1.5477 13°[40]	
1-Methyl-2-(propen-2′-yl)-benzene				
		0.9005_5	**1.5187**	
	182–183 757[43] 181 -181.6 750[27] 93–95 30[27] 88–90 25[27]	0.9001[43] 0.8890 35°[27] 0.8970 24.5°[27] 0.9110 7°[27]	1.5186[43] 1.5171 24°[27] 1.5209 14°[27] 1.5255 6°[27]	

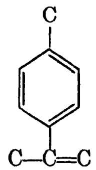
$* \frac{dD}{dt} = -0.0007847/°C$ (7 to 35°C)

$† \frac{dn}{dt} = -0.0004400/°C$ (6 to 24°C)

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-3-(propen-2′-yl)-benzene 				
	185–186 [60] 185 [59] 180–181 756 [43] 60–60.5 11 [42]	0.8795 [42] 0.8910 [43] 0.9035 D_0^{22} [59,60]	1.5062 [42] 1.5127 [43] 1.530 22° [59,60]	
1-Methyl-4-(propen-2′-yl)-benzene 				
	180–182 755 [42,43] 180–181 750 [27] 58–60 1.65 [27]	0.8830 [42,43] 0.9043 26.2° [27] 0.9157 6.8° [27]	1.5082 [27] 1.5095 [42,43] 1.5210 10° [27]	
1-Methyl-2-isopropenylbenzene 				
	175 [59,60] 172–173 756 [29] 59–62 11 [7]	0.9181 D_0^{15} [59,60]	1.5112 30° [7] 1.521 15° [59,60]	
1-Methyl-3-isopropenylbenzene 				
	185–186 [55] 183–185 [64]	0.9115 0° [64]		

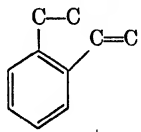
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

1-Methyl-4-isopropenylbenzene



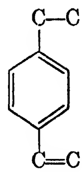
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	185.3						
	186–188 [59]		0.8936	23° [22]	1.52832	23° [22]	
	186 [60]		0.9022	18.7° [70]	1.53447	18.7° [70]	
	184–185 [64]		0.9024	18.5° [70]	1.528	16° [59,60]	
	187	780 [54]	0.9074	D_0^{16} [59,60]	1.52870	$n_{H\alpha}^{18.7}$ [70]	
	186–189	748 [22]	0.9122	0° [64]	1.54944	$n_{H\beta}^{18.7}$ [70]	
	101.5	29 [70]	0.9121	D_0^0 [59,60]	1.56306	$n_{H\gamma}^{18.7}$ [70]	

1-Ethyl-2-ethenylbenzene



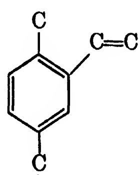
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	68–68.5	12 [17]	0.9119 [17]		1.54221	22° [17]	
					1.53625	$n_{H\alpha}^{22}$ [17]	
					1.55796	$n_{H\beta}^{22}$ [17]	

1-Ethyl-4-ethenylbenzene

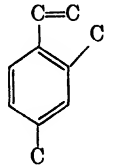


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	86	20 [18,32]	0.8901	25° [52]	1.52055	25° [52]	
	84–85	19 [52]	0.8953	15° [38]	1.5377	15° [38]	
	68	11 [38]	0.9074	13° [32]			

1,4-Dimethyl-2-ethenylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	69	10 [38]	0.9072	17.5° [38]	1.5236	17.5° [38]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Ethenyl-2,4-dimethylbenzene				
	79–80 12[38]	0.9022 21.5°[38]	1.5214 21.5°[38]	

$C_{10}H_{12}$ References

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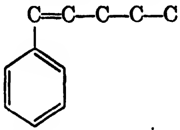
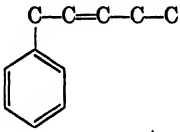
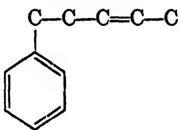
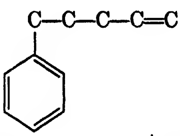
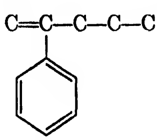
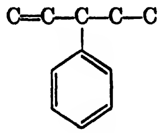
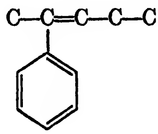
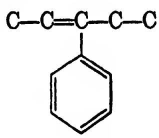
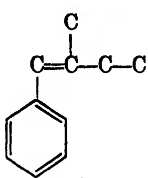
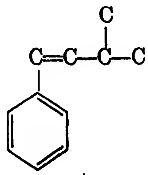
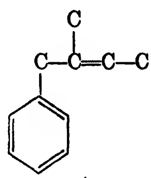
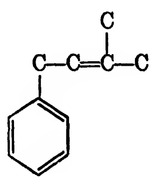
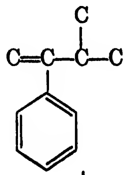
Compound	M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Penten-1-ylbenzene 		217[44]		0.8782[63]		1.51575[63]		
		210–215[39]		0.8924	17°[44]	1.5302	18°[39]	
		202–205[63]		0.892	15°[27]	1.5318	17°[44]	
		87.5	9[44]					
		82	9[27]					
Penten-2-ylbenzene 		201[28]		0.8884	16.2°[60]	1.50890	16.2°[60]	
		111	30[28]	0.8837	16°[27]	1.5059	16°[27]	
		97–98	19[60]			1.50444	$n_{H\alpha}^{16.2}$ [60]	
		92.0–92.3	18.5[60]			1.51986	$n_{H\beta}^{16.2}$ [60]	
		80	12[27]			1.52958	$n_{H\gamma}^{16.2}$ [60]	
Penten-3-ylbenzene 		92–94	16[2]	0.876	D_{21}^{21} [2]	1.5090	21°[2]	
Penten-4-ylbenzene 		206[50]		0.8889[62]		1.5065[62]		
		203–204[62]				1.5060	23°[46]	
		198[46,64]						
		94–98	16[61]					
		77–78	10[62]					
2-Phenylpentene-1 		198–202[55]		0.9138	0°[55,56]			
		198–200[55]						

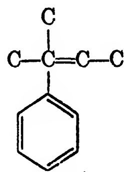
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
3-Phenylpentene-1				
	173–177 718.8 [9]	0.8458 23° [9]		
2-Phenylpentene-2				
	199.2			
	199–201 [56]	0.8950 26.5° [22]	1.5196 26.5° [22]	
	199–200 [22]	0.8976 21.2° [20]		
	199 [20]	0.9321 0° [55]		
	197–199 [55]			
	89–90 16 [20]			
	86 14 [22]			
3-Phenylpentene-2				
	197–198 753 [23]	0.908 21° [16]	1.5300 21° [16]	
	195–197 750 [12]	0.9173 14° [23]	1.5266 15° [23]	
	91–93 18 [23]			
	87–89 17 [16]			
	90 13 [3]			
	84–86 12 [3]			
1-Phenyl-2-methylbutene-1				
	201–202 [40]		1.528 18° [40]	
	199–200 769 [57]			
	98–100 23 [57]			

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Phenyl-3-methylbutene-1 							
	201.7						
	204–206 [56]		0.878	16° [53]	1.5251 [37,59]		
	201–203 [39]		0.8903	14.6° [26,59]	1.532	18° [39]	
	201–202 [37,52,59]		0.887	14.4° [59]	1.5248	14.6° [26,59]	
	207	757 [26,59]	0.887	14° [37]			
	200.5–201.5	737 [53]	0.9191	D_0^4 [39]			
	102–103	26 [26,59]					
	84–86	13 [49]					
1-Phenyl-2-methylbutene-2 							
	198–203 [17]						
1-Phenyl-3-methylbutene-2 							
	205 [26]		0.891	18.3° [26]	1.5125	18.3° [26]	
	198–202 [17]		0.8944	15° [27]	1.5115	15° [27]	
	205–206.5	751 [7]	0.8958	D_{15}^{15} [7]			
	92	15 [26]					
	90	12 [54]					
	83	11 [27]					

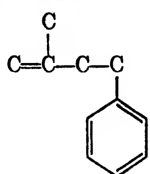
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

2-Phenyl-3-methylbutene-1 

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	191–192 753 [23] 82 12 [23]	0.8991 13.1° [23]	1.5181 13.8° [23]	

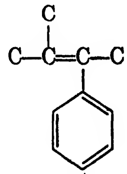
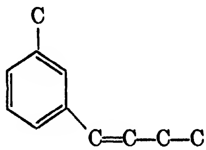
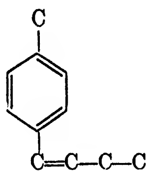
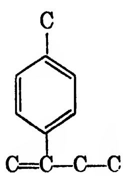
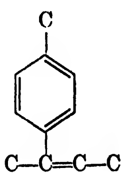
2-Methyl-2-phenylbutene-2 

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	192–193.5 [59] 190.5–192 [59] 89–90 22 [59]	0.8970 19.8° [59] 0.8935 19.4° [59] 0.8968 19.1° [59]	1.51997 19.8° [59] 1.51897 19.4° [59] 1.51989 19.1° [59] 1.51494 $n_{H\alpha}^{19.8}$ [59] 1.51389 $n_{H\alpha}^{19.4}$ [59] 1.51481 $n_{H\alpha}^{19.1}$ [59] 1.53217 $n_{H\beta}^{19.8}$ [59] 1.53097 $n_{H\beta}^{19.4}$ [59] 1.53200 $n_{H\beta}^{19.1}$ [59] 1.54311 $n_{H\gamma}^{19.8}$ [59] 1.54185 $n_{H\gamma}^{19.4}$ [59] 1.54291 $n_{H\gamma}^{19.1}$ [59]	

2-Methyl-4-phenylbutene-1 (a) 

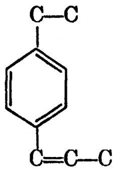
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	205 [21]			

(a) The structure of this compound is questionable.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Methyl-3-phenylbutene-2 				
	190.5–192.0 [60] 190 [38] 83 12 [38] 70 8 [38]	0.8917 [38] 0.9080 6° [38]	1.51835 [38]	
1-*m*-Tolylbutene-1 				
	208 [15,19]	0.8901 18° [14,15]	1.5365 18° [14]	
1-*p*-Tolylbutene-1 				
	210–212 [33,34] 92–93 15 [34] 88–90 7 [34]	0.8893 [33,34]	1.4385 [34]	
2-*p*-Tolylbutene-1 				
	206–209 750 [15]	0.8926 22.5° [15]	1.52735 22.5° [15]	
2-*p*-Tolylbutene-2 				
	93.5–94 10 [51]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1-Ethyl-4-(propen-1′-yl)-benzene



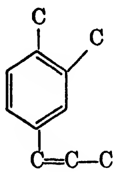
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	216–218 [33,35] 105–107 17 [33]	0.9072 18° [33,35]	1.5437 18° [35]	

Ethenylisopropylbenzene (a)

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	203–206 [42] 203–204 [43] 201–202 [10] 76 10 [30]	0.8799 15° [30] 0.8902 15° [42,43]	1.5198 15° [30]	

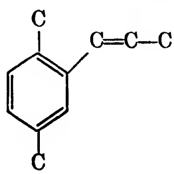
(a) The structure of this compound is not given.

1,2-Dimethyl-4-(propen-1′-yl)-benzene

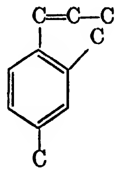
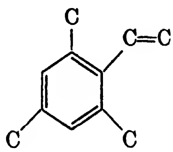
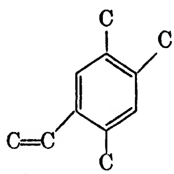
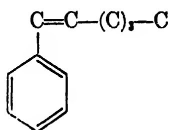
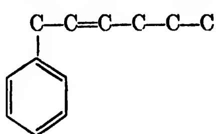


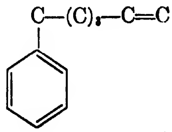
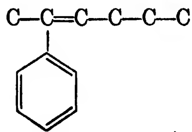
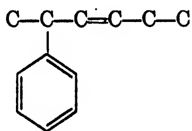
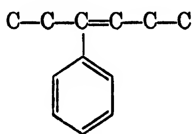
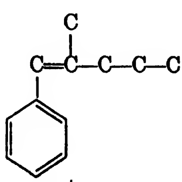
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	224–226 [33] 165–168 16 [33] 110–112 16 [35]	0.9151 18° [33,35]	1.5558 18° [35]	

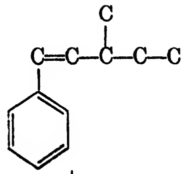
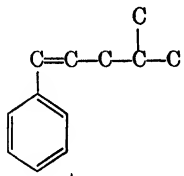
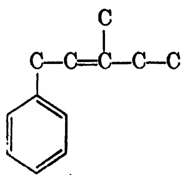
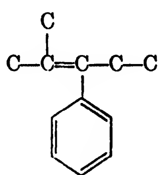
1,4-Dimethyl-2-(propen-1′-yl)-benzene

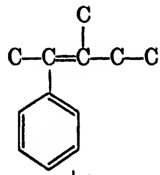
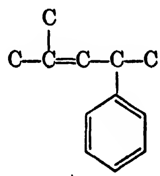
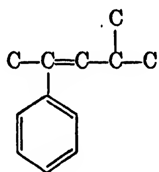
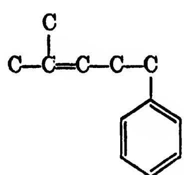


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	220–223 [35] 219–223 [36] 84–88 8 [35,36]	0.9259 22° [35,36]	1.5435 22° [35]	

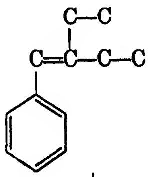
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-(Propen-1′-yl)-2,4-dimethylbenzene 							
	206–208 [33,35]		0.9096	17.5° [4]	1.540	17.5° [4]	
	213–215	735 [4]	0.903	13° [33,35]	1.5342	13° [35]	
	100	20 [4]					
	85–88	10 [33,35]					
1,3,5-Trimethyl-2-ethenylbenzene 							
	208–210 [29]		0.9057 [19]		1.5296	17.5° [30]	
	203–205 [19]		0.9073	17.5° [30]			
	92	14 [19]					
	83	12 [4A]					
1,2,4-Trimethyl-5-ethenylbenzene 							
	219–220 [29]		0.9137	17° [30]	1.5379	17° [30]	
	97	22 [29]					
	97	13 [30]					
$C_{12}H_{16}$							
Hexen-1-ylbenzene 							
	97–100	8 [41]	0.9455	25° [41]	1.5377	25° [41]	
Hexen-2-ylbenzene 							
	108	16 [28]	0.8898	16° [28]	1.5058	16° [28]	

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Hexen-5-ylbenzene 							
	216[46]		0.8839[62]		1.5033[62]		
	119	30[46]			1.5010	25°[46]	
	104	17[50]					
	94.5–95	10[32]					
	94–95	10[62]					
2-Phenylhexene-2 							
	223–226[8]						
2-Phenylhexene-3 							
	84	10[48]					
3-Phenylhexene-3 							
	216[65]						
1-Phenyl-2-methylpentene-1 							
	212–215	768[40]	0.9926	0°[40]	1.521	17°[40]	

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Phenyl-3-methylpentene-1 							
	126	15[31]	0.8906	15°[31,59]	1.5277	15°[31,59]	$[\alpha]_D^{15} = +50.3°$[31]
	100–103	9[31,59]	0.9146	12°[31]	1.5243	12°[31]	$[\alpha]_D^{12} = +43.0°$[31]
1-Phenyl-4-methylpentene-1 							
	107–109	11[47]					
1-Phenyl-3-methylpentene-2 							
	226	749[26,27]	0.9004	18°[26]	1.5100	18°[26,27]	
	119–120	20[27]	0.9014	18°[27]			
	103–104	15[26]					
2-Methyl-3-phenylpentene-2 							
	195–198[1]		0.8886	17.5°[59]	1.51422	17.5°[59]	
	206–207	765[25]	0.8913	14.5°[25]	1.5134	14.5°[25]	
	97.2–97.8	24[59]			1.50950	$n_{H\alpha}^{17.5}$[59]	
	83–84	15[25]			1.52569	$n_{H\beta}^{17.5}$[59]	
					1.53575	$n_{H\gamma}^{17.5}$[59]	

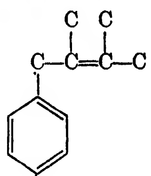
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Phenyl-3-methylpentene-2 				
	204–206 [1]	0.8859 [11]	1.50814 [11]	
	206.5	0.8921 14 7° [11]		
	-207 764 [11]	0.9020 0° [11]		
	99.5–100 22 5 [11]			
2-Methyl-4-phenylpentene-2 				
	210–211 755 [26]	0.8931 [26]	1.5162 [26]	
	98–100 19 [26]			
2-Phenyl-4-methylpentene-2 				
	207 764 [26]	0.909 16° [5]	1.5231 16° [5]	
	216–220 738 [5]	0.8948 15° [26]	1.516 15° [26]	
	99–101 20 [26]			
	111–115 18 [5]			
1-Phenyl-4-methylpentene-3 				
	108–112 25 [6]			

1-Phenyl-2-ethylbutene-1



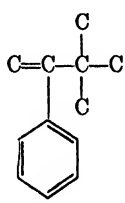
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	216–218[40]		0.8924	18.7°[59]	1.51677	18.7°[59]	
	106–108	19.5[59,60]	0.9038	18.5°[25]	1.5182	18.5°[25]	
	97–98	13[25]	0.9038	18°[40]	1.51656	18°[59]	
	97.3	13[59]	0.9040	18°[59]	1.5182	18°[40]	
					1.51199	$n_{H\alpha}^{18.7}$[63]	
					1.51151	$n_{H\alpha}^{18}$[59]	
					1.52837	$n_{H\beta}^{18.7}$[59]	
					1.52983	$n_{H\beta}^{18}$[59]	
					1.53866	$n_{H\gamma}^{18.7}$[59]	
					1.53830	$n_{H\gamma}^{18}$[59]	

1-Phenyl-2,3-dimethylbutene-2

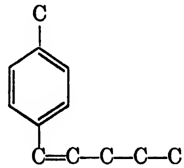
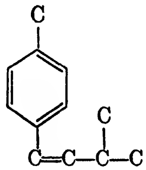
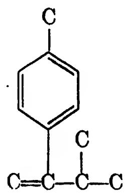
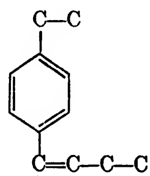
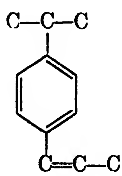


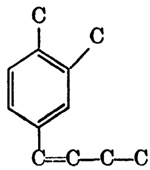
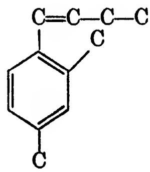
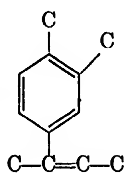
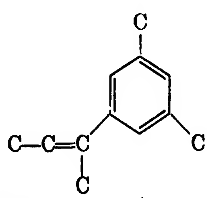
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	220–221	750[7]	0.903	D_{15}^{15}[7]			

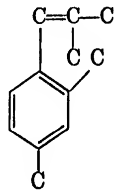
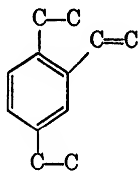
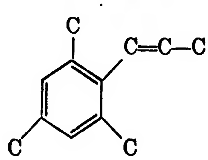
2-Phenyl-3,3-dimethylbutene-1



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	88–92	15[45]	0.8839	25°[45]	1.50133	25°[45]	
					1.49708	$n_{H\alpha}^{25}$[45]	
					1.51185	$n_{H\beta}^{25}$[45]	
					1.52106	$n_{H\gamma}^{25}$[45]	

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-*p*-Tolylpentene-1 				
	221–224[15]			
1-*p*-Tolyl-3-methylbutene-1 				
	221–222[37] 106–107 10–11[37]	0.885 18°[37]	1.5316 20°[37]	
2-*p*-Tolyl-3-methylbutene-1 				
	210–212[15]	0.8838 27°[15]	1.52543 27°[15]	
1-Ethyl-4-(buten-1′-yl)-benzene 				
	230–233[34] 98–102 7[34]	0.9074[34]	1.5405[34]	
1-Isopropyl-4-(propen-1′-yl)-benzene 				
	141–146 28[33,35] 121–125 19[33,35]	0.9308 22°[33,35]	1.5430 22°[35]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Isopropylpropen-2-ylbenzene (a)				
	229–230 [43]	0.8900 15° [43]		
(a) The structure of this compound is not given.				
1,2-Dimethyl-4-(buten-1′-yl)-benzene 				
	238–239 [34] 122–124 18 [34]	0.9114 15° [34]	1.5458 [34]	
1-(Buten-1′-yl)-2,4-dimethylbenzene 				
	226–228 [33,34] 114 21 [19] 109–111 16 [33,34]	0.8937 19° [19] 0.8967 18° [33,34]	1.5349 [34]	
1,2-Dimethyl-4-(2′-buten-2′-yl)-benzene 				
	85–87 10 [12]	0.891 16° [12]	1.51255 16° [12]	
1,3-Dimethyl-5-(2′-buten-2′-yl)-benzene 				
	218–221 [58]	0.892 [58]		

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-(2′-Methylpropen-1′-yl)-2,4-dimethylbenzene 							
	210 [18]		0.886	25° [18]	1.523	25° [18]	
	108–109	16 [18]	0.916	0° [18]	1.526	19° [18]	
	96–97	12 [18]					
1,4-Dimethylbutenylbenzene (a)							
	221 [34]						
	117–120	17 [34]	0.8958	18° [34]	1.5280 [34]		
(a) The structure of this compound is not given.							
1,4-Diethyl-2-ethenylbenzene 							
	96–97	12 [30]	0.8915	16° [30]	1.5139	16° [30]	
1,3,5-Trimethyl-2-(propen-1′-yl)-benzene 							
	223–224	745 [24]	0.8988	21° [24]	1.5229	21° [24]	
	109–110	18 [24]	0.9003	17.5° [19]			
	103	13 [19]					

$C_{11}H_{14}$ and $C_{12}H_{16}$ References

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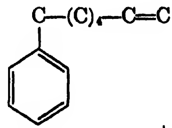
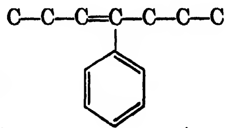
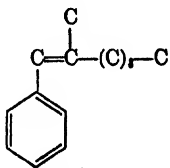
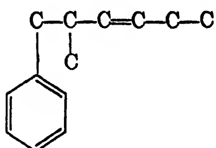
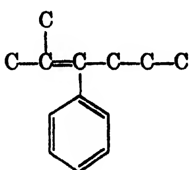
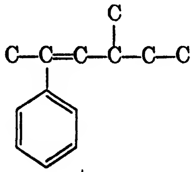
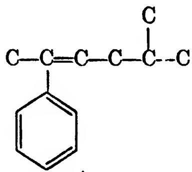
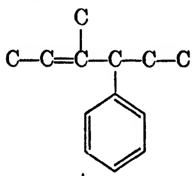
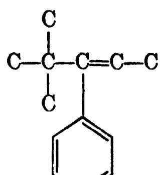
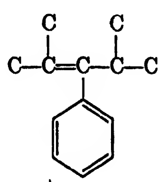
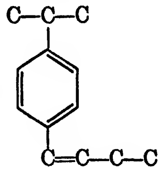
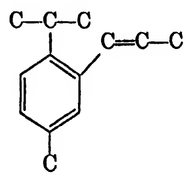
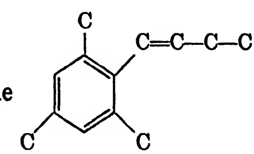
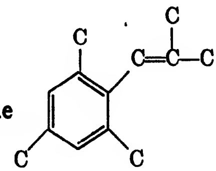
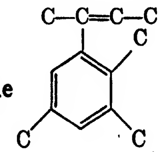
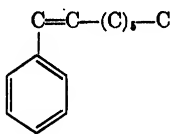
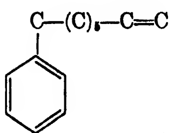
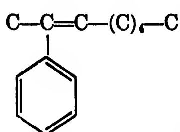
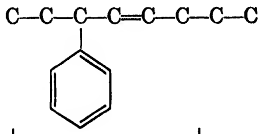
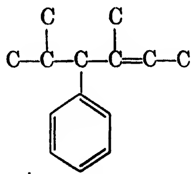
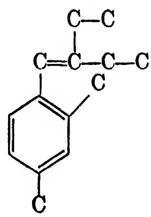
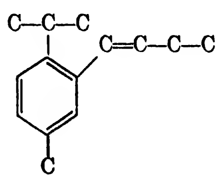
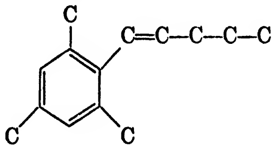
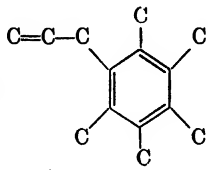
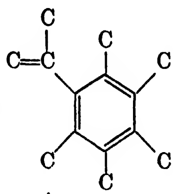
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Hepten-6-ylbenzene 				
	236 [29] 123 24 [29]		1.5007 22° [29]	
4-Phenylheptene-3 				
	228 [1,24,26]	0.8855 15° [25]	1.522 15° [25]	
1-Phenyl-2-methylhexene-1 				
	114–116 12 [30]	0.8974 17° [30]	1.51505 17° [30]	
1-Phenyl-2-methylhexene-3 				
	106–110 16 [2]	0.875 D_{21}^{21} [2]	1.4905 21° [2]	
2-Methyl-3-phenylhexene-2 				
	210–212 755 [14] 94–96 12 [14]	0.8897 16° [14]	1.5070 16° [14]	

M. P.,°C	B. P.,°C @ 760mm		D^{20}_{4}		n^{20}_{D}		Additional Data
2-Phenyl-4-methylhexene-2 							
	142	50 [6]	0.8839	25° [6]	1.5117	25° [6]	
2-Phenyl-5-methylhexene-2 							
	121	20 [12]	0.8814	15° [12]			
3-Methyl-4-phenylhexene-2 							
	91.75 -92.5	8 [7]	0.8861 [7] 0.891	13.6° [7]	1.50644	13.6° [7]	
2,2-Dimethyl-3-phenylpentene-3 							
	95–100 91–93	14 [28] 12 [28]	0.9064	25° [28]	1.51550 1.51100 1.52710 1.53776	25° [28] $n^{25}_{H\alpha}$ [28] $n^{25}_{H\beta}$ [28] $n^{25}_{H\gamma}$ [28]	
2,4-Dimethyl-3-phenylpentene-2 							
	225–228 [23,26]						

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Isopropyl-4-(buten-1′-yl)-benzene 				
	242–243 [19]	0.8932 14° [19]	1.5330 [19]	
Isopropylbuten-1-ylbenzene (a)				
124–125.5 [9]				
(a) The position of the substituents in benzene is not given.				
1-Isopropyl-4-isobutenylbenzene (a)				
	236–238 [37]			
(a) The position of the double bond in isobutenyl is not given.				
1-Isopropylphenyl-2-methylpropene-1 (a)				
	235–236 745 [36] 105–106 10 [36]			
(a) The position of the substituents in benzene is not given.				
1-Isopropyl-2-(propen-1′-yl)-4-methylbenzene 				
	226–228 [17,18] 128–131 32 [17,18]	0.8899 19° [18] 0.8899 18° [17]	1.5225 19° [18]	
1,3,5-Trimethyl-2-(buten-1′-yl)-benzene 				
	118–119 14 [11]	0.8953 14° [11]		

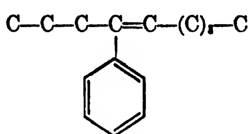
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
,3,5-Trimethyl-2-(isobuten-1′-yl)-benzene 				
	226–227 745 [13] 118–120 14 [13] 103–106 5 [20]	0.8900 18.8° [13]	1.5162 18.8° [13]	
1-(2′-Buten-2′-yl)-2,3,5-trimethylbenzene 				
	234–236 [12]	0.8992 15° [12]		
$C_{14}H_{20}$				
Octen-1-ylbenzene 				
	136–138 13 [30]	0.9063 17° [30]	1.50728 17° [30]	
Octen-7-ylbenzene 				
	115–117 8 [40]	0.8792 [40]	1.4995 [40]	
2-Phenyloctene-2 				
	121–122 10 [27]	0.8810 D_{17}^{17} [27]	1.49459 17° [27]	

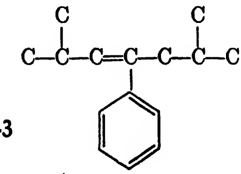
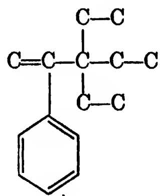
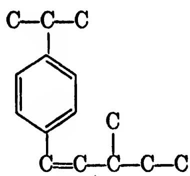
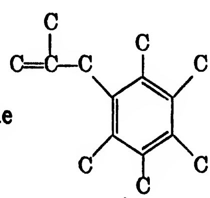
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
3-Phenyloctene-4 				
	104 8[31]			
2,4-Dimethyl-3-phenylhexene-4 				
	224–226[42] 102 13[42]	0.8892 19.7°[42]	1.50444 $n^{19.7}_{H\alpha}$ [42] 1.51890 $n^{19.7}_{H\beta}$ [42] 1.52793 $n^{19.7}_{H\gamma}$ [42] 1.50889 $n^{19.7}_{He}$ [42]	
1-(2-Ethylbuten-1′-yl)-2,4-dimethylbenzene 				
	242[8] 134–135 15[8] 122–123 10–11[8]	0.887 28°[8] 0.914 10°[8] 0.927 0°[8]	1.513 28°[8]	
1-Isopropyl-2-(buten-1′-yl)-4-methylbenzene 				
	241–244[19]	0.9353 14°[19]	1.5274[19]	

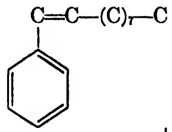
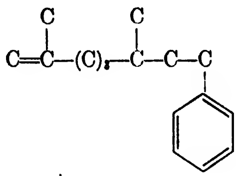
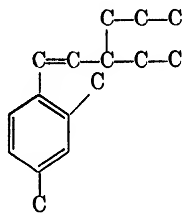
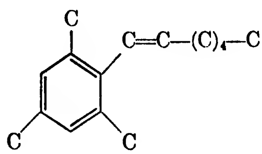
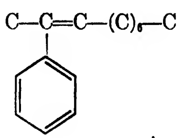
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5-Trimethyl-2-(penten-1′-yl)-benzene 				
	239–240 758 [13] 136 22 [13]	0.8901 [13]	1.5114 [13]	
Pentamethylpropen-2-ylbenzene 				
135 [3,32]				Sublimation Point 128 [3,4,32]
Pentamethylisopropenylbenzene 				
134(a) [32]				Sublimation Point 122 [3] 121 [32]

(a) Decomposition takes place at the boiling point.

$C_{15}H_{22}$

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4-Phenylnonene-4 				
	117–121 6 [27]	0.8882 D_{20}^{20} [27]	1.5012 [27]	

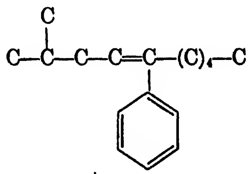
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,6-Dimethyl-4-phenylheptene-3 				
	124–126 20[38] 110–112 10[38]	0.8731 16.5°[38]	1.49762 25°[38]	
2-Phenyl-3,3-diethylpentene-1 				
	130–132 15[28]			
1-Isopropyl-4-(3′-methylpenten-1′yl)-benzene 				
	139–140.5 9.5[15]	0.8801 16°[15]	1.5181 16°[15]	$[\alpha]_D^{16}$ = +41.89°[15]
Pentamethyl-(2-methylpropen-2-yl)-benzene 				
				Sublimation Point 122[4]

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Decen-1-ylbenzene 							
	162–163	14 [29]					
2,6-Dimethyl-8-phenyloctene-1 							
	145–146	9.5 [16]	0.8844	11.5° [16]	1.5029	11.5° [16]	$[\alpha]_D^{17}$ = −7.26° [16]
1-(3′-Propylpenten-1′-yl)-2,4-dimethylbenzene 							
	160.5	23 [8]	0.915	19° [8]	1.508	19° [8]	
	143	15 [8]	0.928	0° [8]			
1,3,5-Trimethyl-2-(hepten-1′-yl)-benzene 							
	270–272 [13]		0.8844	17° [13]	1.5136	17° [13]	
	170–171	23 [13]					
$C_{17}H_{26}$							
2-Phenylundecene-2 							
	166–170	11 [39]	0.8801(a) [39]				

(a) The temperature for this density is not given.

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

2-Methyl-5-phenyldecene-4



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	153–155	18 [38]	0.8866	26° [38]	1.49913	26.5° [38]	
			0.9171(a)	17° [38]			
			0.8859	0° [38]			
			0.9301(a)	0° [38]			

(a) These densities were determined on a sample treated differently from that on which the other data were determined.

$C_{18}H_{28}$

2-Phenyldodecene (a)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
	125	0.8 [35]	0.8761 [35]		1.5035 [35]	
			0.8692	30° [35]		

(a) The position of the double bond is not given.

3-Phenyldodecene (a)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
	145–146	2.0 [35]	0.8712 [35]		1.5001 [35]	
			0.8640	30° [35]		

(a) The position of the double bond is not given.

4-Phenyldodecene (a)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
	118–120	0.8 [35]	0.8726 [35]		1.5025 [35]	
			0.8662	30° [35]		

(a) The position of the double bond is not given.

5-Phenyldodecene (a)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
	131–132	1 [35]	0.8755 [35]		1.5027 [35]	
			0.8680	30° [35]		

(a) The position of the double bond is not given.

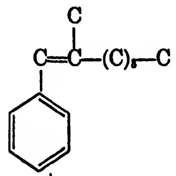
6-Phenyldodecene (a)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
	127	1.0 [35]	0.8718 [35]		1.5055 [35]	
			0.8846	30° [35]		

(a) The position of the double bond is not given.

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

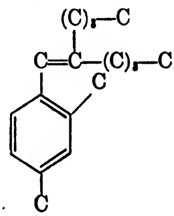
1-Phenyl-2-methylundecene-1



M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
	180	13 [39]	0.8790(a) [39]				
	177–178	12 [39]					

(a) The temperature for this density is not given.

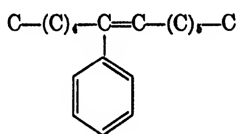
1-(2′-*n*-Butylhexene-1′-yl)-2,4-dimethylbenzene



M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
	286–288 [8]		0.889	27° [8]	1.5025	27° [8]	
	173	20 [8]					
	145	6 [8]					

$C_{19}H_{30}$

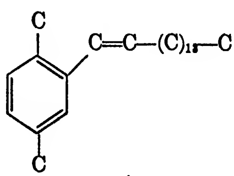
6-Phenyltridecene-6



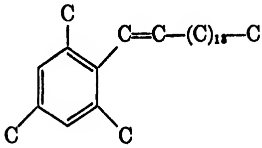
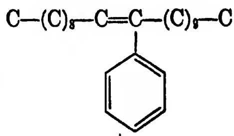
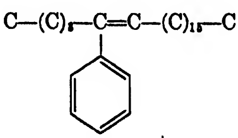
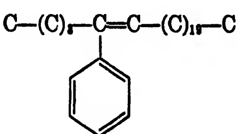
M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
	153–154	8 [27]	0.8774	D_{18}^{18} [27]	1.49810	18° [27]	

$C_{24}H_{40}$

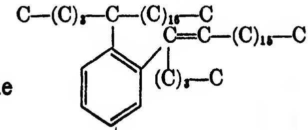
1,4-Dimethyl-2-(hexadecen-1′-yl)-benzene



M. P.,°C	B. P.,°C	mm	D_4^{20}		n_D^{20}		Additional Data
	254	17 [11]	0.868 [11]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5-Trimethyl-2-(hexadecen-1′-yl)-benzene 				
28.5–29[11]	260 23[11]			
$C_{27}H_{46}$ **11-Phenylheneicosene-10** 				
		0.8638	**1.4922**	
48.2[33]	203 1.0[5,41] 190 0.5[5]	0.8636[5,33,41] 0.8113 98.9°[5] 0.8376 60°[5] 0.8520 37.8°[5] 0.8770 0°[34]	1.4922[5,33,41] 1.4845 40.0°[5] 1.4884 30.0°[5]	
* $\frac{dD}{dt} = -0.0006626/°C$ (0 to 99°C) † $\frac{dn}{dt} = -0.000385/°C$ (20 to 40°C)				
Bombicestene (a)				$[\alpha]_D^{26} = -58.2°$[10]
91–92[10]				
(a) The structure of this compound is not given.				
$C_{28}H_{48}$ **5-Phenyldocosene-5** 				
	205–210 1[22]	0.8675 25°[21]	1.4899 25°[21]	
$C_{32}H_{56}$ **5-Phenylhexacosene-5** 				
		0.8580 25°[21]	1.4909 25°[21]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-(5′-Docosyl)-2-(5″-docosen-5″-yl)-benzene				
31.5[21]		0.8520(a) 25°[21]	1.4848 25°[21]	



(a) This density is an extrapolated value.

$C_{13}H_{18}$-$C_{50}H_{92}$ References

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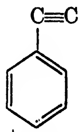
4. BENZENE WITH ONE ALKYNYL SUBSTITUTION, C_nH_{2n-10}

Ethynylbenzene



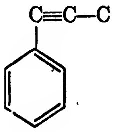
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	142.4	**0.9300**	**1.5489**	*
−44.8[68]	144–145[22]	0.9281[19]	1.548[11] †	
	142–144[29,30,61]	0.9295[18,75]	1.5485[19]	
	142–143[11,58,68]	0.930[11]	1.54935[40]	
	141–143[2]	0.93125[40]	1.5461 26°[74]	
	140–143[74]	0.80832 141.6°[77]	1.55012 17.4°[21]	
	142(a)	0.9246 25°[72]	1.5513 13.4°[71]	
	141–142[9,54,55,71]	0.9265 23.1°[75]	1.5524 12.5°[54]	
	140–142[20]	0.927 22°[58]	1.54095 $n_{H\alpha}^{23.0}$[75]	
	141.70–141.75[72]	0.930 22°[71]	1.54160 $n_{H\alpha}^{20.0}$[18,75]	
	141.6[77]	0.930 D_{20}^{20}[68]	1.54304 $n_{H\alpha}^{20.0}$[40]	
	141.5[76]	0.9332 D_{20}^{20}[32]	1.54374 $n_{H\alpha}^{17.4}$[21]	
	140.5–141[13]	0.9371 12.5°[54]	1.5446 $n_{H\alpha}^{13.4}$[71]	
	139–141[32]	0.94658 0°[77]	1.54604 $n_{H\alpha}^{12.5}$[54]	
	138–141[56]		1.56371 $n_{H\beta}^{23.0}$[75]	
	139.8–140.6[49]		1.56456 $n_{H\beta}^{20.0}$[18,75]	
	140[44,63]		1.56569 $n_{H\beta}^{20.0}$[40]	
	139–140[18,26]		1.5675 $n_{H\beta}^{13.4}$[71]	
	139[34]		1.57986 $n_{H\beta}^{12.5}$[54]	
	138–139[69]		1.57843 $n_{H\gamma}^{23.0}$[75]	
	138[23]		1.57899 $n_{H\gamma}^{20.0}$[18,75]	
	141–142 758.9[62]		1.5810 $n_{H\gamma}^{18.4}$[71]	
	140–141 750[35]		1.59856 $n_{H\gamma}^{12.5}$[54]	
	141–142 720.5[50]		1.5471 $n_{H\epsilon}^{23.0}$[75]	
	75 90[19]			
	44 18[5]			
	38 15[61]			
	39–40 14[36]			

* $\frac{dD}{dt} = -0.0008445/°C$ (0 to 25°C)

† $\frac{dn}{dt} = -0.0004541/°C$ (12 to 26°C)

(a) The boiling point 142 is found in references 31, 33, 57, 66, 67, 78.

Propyn-1-ylbenzene

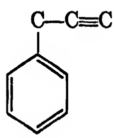


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	182.9		0.9380				*
	185.0[65]		0.938[17]		1.565[17]		
	181–185[70]		0.9388[19]		1.5650[19]		
	182–183[79]		0.939	D_{20}^{20}[48]	1.56470[25]		
	181–182[59]		0.944	17°[71]	1.561	18°[71]	
	181(a)[45]		0 9393	16°[25]	1.563	15°[15]	
	113	84[19]	0.942	15°[15]			
	76	17[51]	0.9545	0°[25]			
	76	16[12]					
	75	16[45]					
	71–74	15[71]					
	74–75	14[59]					
	73	13[15,17]					
	72	13[8]					
	71–71.5	12[25]					
	70	11[12,14]					

* $\frac{dD}{dt} = -0.0008119/°C$ (0 to 20°C)

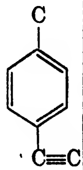
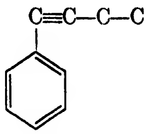
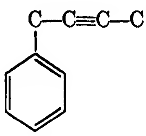
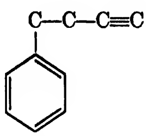
(a) The author states that polymerization takes place at the boiling point.

Propyn-2-ylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	166(a)[45]		0.932[15]		1.5272[16]		
	70–71	20[45,46]	0.936[16]		1.535[15]		
	69.5–70	18[11]	0.931	28°[27]	1.53481	23°[27]	
	68–69	17[6]	0.939	D_{20}^{20}[45]			
	68–68.5	16[15]	0.938	15°[12A]			
	67	16[16]					
	67	15[11]					
	67–68	14[4]					
	65.5–66	14[12]					
	63	11[14]					

(a) The author states that polymerization take place at the boiling point.

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Methyl-4-ethynylbenzene 							
23 [24,42]	168–170 [41,42]		0.9159 [60]		1.5447	25° [60]	
	168 [24]		0.903	18° [41]	1.5475	17° [41]	
	63	20 [36]	0.912	18° [42]			
	66–67	18 [64]					
	65–67	18 [60]					
	55–60	15 [41]					
$C_{10}H_{10}$							
Butyn-1-ylbenzene 							
	201–203 [52,53]		0.9210 [37]		1.537	18° [71]	
	87–90	18 [4,71]	0.923	21° [52,53]			
	82	5 [37]	0.915	18° [71]			
Butyn-2-ylbenzene 							
	80	10 [47]	0.9261 [47]		1.5480 [47]		
Butyn-3-ylbenzene 							
	190–191 [55]		0.9375	0° [2]			
	189–191 [2]		0.9391	0° [3]			
	189–191	758 [3]					
1-Methyl-2-propynylbenzene (a)							
	80	15 [7]	0.940	14° [7]	1.532	14° [7]	
			0.951	0° [7]			

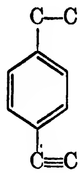
(a) The position of the triple bond is not given.

1-Methyl-4-propynylbenzene (a)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	83	15 [7]	0.947	14° [7]	1.533	14° [7]	
			0.958	0° [7]			

(a) The position of the triple bond is not given.

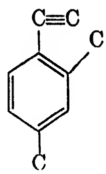
1-Ethyl-4-ethynylbenzene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	190–192 [41]		0.9088	25° [60]	1.5360	25° [60]	
	72–74	16 [60]	0.9086	18° [41,43]	1.547(a) [41]		
	110	10 [43]	0.9128	16° [41]			

(a) The temperature for this refractive index is not given.

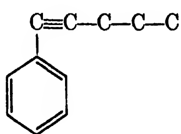
1-Ethynyl-2,4-dimethylbenzene



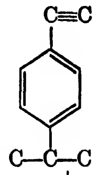
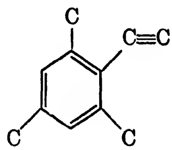
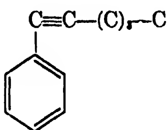
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	184–186	756 [28]	0.9258	12° [28]	1.5438	12° [28]	
	85	22 [28]					

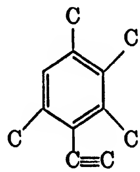
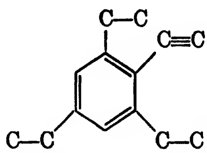
$C_{11}H_{12}$

Pentyn-1-ylbenzene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	212–215 [71]		0.911	18° [71]	1.540	18° [71]	
	100–101	21 [71]			1.5449	14.0° [71]	
	102–103	18.5 [10]			1.5392	$n_{H\alpha}^{14.0}$ [71]	
					1.5601	$n_{H\beta}^{14.0}$ [71]	
					1.5743	$n_{H\gamma}^{14.0}$ [71]	

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Ethynyl-4-isopropylbenzene 							
	79–81	12 [60]	0.9037	25° [60]	1.5296	25° [60]	
1-Propynyl-2,4-dimethylbenzene (a)							
	95	15 [7]	0.941	14° [7]	1.534	14° [7]	
			0.952	0° [7]			
(a) The position of the triple bond is not given.							
1,4-Dimethyl-2-propynylbenzene (a)							
	98	15 [7]	0.939	14° [7]	1.531	14° [7]	
			0.951	0° [7]			
(a) The position of the triple bond is not given.							
1,3,5-Trimethyl-2-ethynylbenzene 							
2.7–3.5 [73]	103–107	23 [73]	0.9185	25° [73]	1.5429	25° [73]	
	100.6 –101.5	20 [73]					
$C_{12}H_{14}$							
Hexyn-1-ylbenzene 							
	229–232 [71]		0.9024 [37]		1.5347 [37]		
	119–121	18 [10]	0.899	17° [71]	1.529	14.0° [71]	
	114–115	14 [71]			1.5292	$n^{20}_{H\alpha}$ [37]	
	109–110	12 [37]			1.5248	$n^{14.0}_{H\alpha}$ [71]	
	94–95	4 [37]			1.5485	$n^{20}_{H\beta}$ [37]	
					1.5304	$n^{14.0}_{H\beta}$ [71]	
					1.521	$n^{20}_{H\gamma}$ [37]	
					1.5440	$n^{14.0}_{H\gamma}$ [71]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Propynyl-4-isopropylbenzene (a)				
	101 15[7]	0.924 14°[7] 0.933 0°[7]	1.523 14°[7]	
(a) The position of the triple bond is not given.				
1-Methyl-4-isopropylethynyl-benzene (a)				
	128–130 50[41,43]	0.8882 17°[41,43] 0.898 10°[41]	1.527(b)[41]	
(a) The position of the ethynyl group is not given. (b) The temperature for this refractive index is not given.				
1,2,3,5-Tetramethyl-4-ethynylbenzene 				
	86 1[1]	0.9463[1]	1.5561[1]	
$C_{13}H_{16}$ ***n*-Pentylethynylbenzene (a)**				
	126–127 15[10]			
(a) The structure of this compound is not given.				
$C_{14}H_{18}$ **1-Tolylheptyne-1 (a)**				
	260–262[38]			
(a) The position of the methyl group in the tolyl radical is not given.				
1,3,5-Triethyl-2-ethynylbenzene 				
	124–126 14–16[41]	0.9004 21°[41]		

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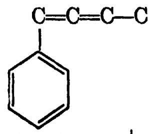
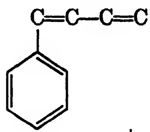
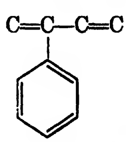
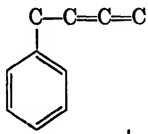
5. BENZENE WITH ONE ALKADIENYL SUBSTITUTION, C_nH_{2n-10}

	M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Phenylbutadiene-1,2 								
		76–77	10 [1]	0.9240	26.5° [1]	1.5754 [1]		
		44–47	0.5–1.0 [1]			1.5698	30° [1]	
						1.5716	24° [1]	
1-Phenylbutadiene-1,3 								
	4.5 [28]	95	20 [28]	0.9286 [28]		1.5920(b)	28° [31]	
		96	18 [35]	0.928	D_{20}^{20} [29]	1.5950(a)	28° [31]	
		94–96	18 [19]	0.9309	16° [22,39]	1.6093	18° [18]	
		90–92	16 [11]	0.9316	15° [22]	1.60895	16.2° [7]	
		93–96	15 [4]	0.9333	14.9° [39]	1.61283	16° [22,39]	
		90	15 [22,39]			1.6140	16° [20]	
		88–89	15 [39]			1.60808	14.9° [39]	
		88	14 [36]			1.59317	$n_{H\alpha}^{20}$ [35]	
		93–95	12 [10]			1.59978	$n_{H\alpha}^{16.2}$ [7]	
		85–86	12 [27]			1.60345	$n_{H\alpha}^{16}$ [22,39]	
		86(a)	11 [31]			1.59736	$n_{H\alpha}^{14.9}$ [39]	
		83–84	11 [13]			1.62952	$n_{H\beta}^{20}$ [35]	
		76(b)	11 [31]			1.63410	$n_{H\beta}^{16.2}$ [7]	
		90(a)	10 [37]			1.64232	$n_{H\beta}^{16}$ [22,39]	
		50–51	0.4 [18]			1.63707	$n_{H\beta}^{14.9}$ [39]	
						1.65044	$n_{H\gamma}^{20}$ [35]	
						1.67190	$n_{H\gamma}^{16}$ [22,39]	
						1.66514	$n_{H\gamma}^{14.9}$ [39]	
2-Phenylbutadiene-1,3 								
		60–61	17 [5]	0.9226 [5]		1.5489 [5]		
		58–59	9 [3]					

(a) This constant was determined on the *cis* form.
(b) This constant was determined on the *trans* form.

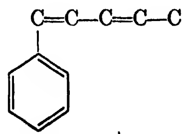
1-Phenylbutadiene-2,3



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	72–73	17[5]	0.9220[5]		1.5460[5]		

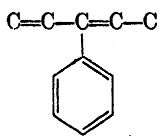
$C_{11}H_{12}$

1-Phenylpentadiene-1,3



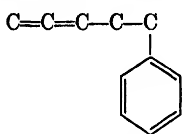
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
−4[22]	116	16[22,32]	0.9325	15.2°[39]	1.59997	15.2°[39]	
	112–114.5	15[39]	0.9384	13°[22]	1.61114	13°[22]	
	110	13[4]			1.58987	$n_{H\alpha}^{15.2}$ [39]	
					1.60167	$n_{H\alpha}^{13}$ [22]	
					1.62739	$n_{H\beta}^{15.2}$ [39]	
					1.64065	$n_{H\beta}^{13}$ [22]	
					1.66056	$n_{H\gamma}^{15.2}$ [39]	
					1.67038	$n_{H\gamma}^{13}$ [22]	

3-Phenylpentadiene-1,3



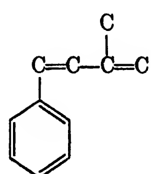
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	85–86	15[26]	0.915	21°[26]	1.5500	21°[26]	

5-Phenylpentadiene-1,2

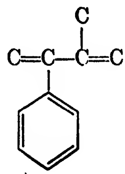
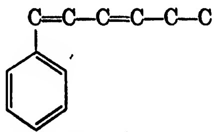
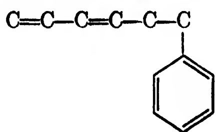
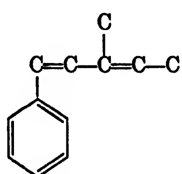


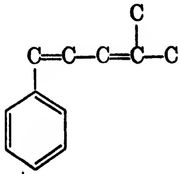
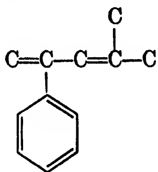
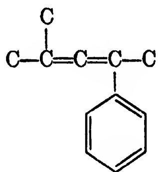
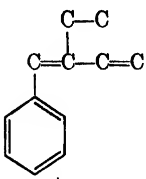
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	76–77	7[5]	0.9169[5]		1.5400[5]		

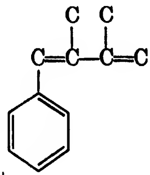
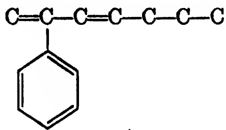
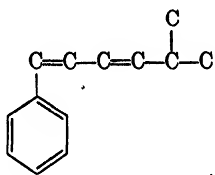
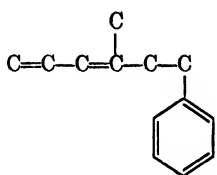
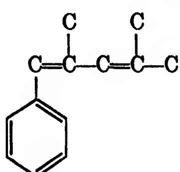
1-Phenyl-3-methylbutadiene-1,3



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
37[25]	124	32[19]	0.9423	23°[19]			
	115	18[15,16]					

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Phenyl-3-methylbutadiene-1,3 				
	95 24[8]			
$C_{12}H_{14}$				
1-Phenylhexadiene-1,3 				
	128 16[22]	0.9189[22] 0.9253 12°[22]	1.60252 12°[22] 1.59164 $n_{H\alpha}^{12}$[22] 1.62999 $n_{H\beta}^{12}$[22] 1.65874 $n_{H\gamma}^{12}$[22]	
6-Phenylhexadiene-1,3 				
	99.5 -100.5 11[6]	0.9304 13°[6]	1.5446 13°[6]	
1-Phenyl-3-methylpentadiene-1,3 				
	132–133 21[19] 130 20[21]	0.9523 23°[19] 0.9593 19°[21]	1.5366 19°[21]	

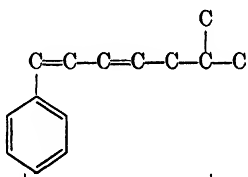
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-4-methylpentadiene-1,3 				
	123–124 14[39]	0.9512 16.2°[39]	1.54744 16.2°[39] 1.54090 $n_{H\alpha}^{16.2}$[39] 1.56509 $n_{H\beta}^{16.2}$[39] 1.59232 $n_{H\gamma}^{16.2}$[39]	
2-Phenyl-4-methylpentadiene-1,3 				
	77–80 10[33]	0.9235[33]	1.547[33]	
2-Methyl-4-phenylpentadiene-2,3 				
	218–220 751[20] 107–108 20[20]	0.922 D_{20}^{20}[29] 0.9277 19.8°[20]	1.5236[20]	
1-Phenyl-2-ethylbutadiene-1,3 				
	110–111 14[9]	0.9288 19°[9]	1.576[9]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2,3-dimethylbutadiene-1,3				
	165 30[24]			
$C_{13}H_{16}$				
2-Phenylheptadiene-1,3				
	246–248[17]	0.9384 15°[17]	1.5422 14°[17]	
1-Phenyl-5-methylhexadiene-1,3				
	143 22[22,39] 136 16[22,39]	0.9248[22,39]	1.58727[22,39] 1.57822 $n^{20}_{H\alpha}$ [22,39] 1.61401 $n^{20}_{H\beta}$ [22,39] 1.64065 $n^{20}_{H\gamma}$ [22,39]	
1-Phenyl-3-methylhexadiene-3,5				
	116 12[6]	0.9152 13.3°[6]	1.5321 13.3°[6]	
1-Phenyl-2,4-dimethylpentadiene-1,3				
	234–236 730[40]			

M. P.,°C	B. P.,°C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
4-*m*-Xylylpentadiene-1,3 (a)				
	230–233[30] 120–121 21.5[30]	0.9097 21°[30]	1.53233 21°[30]	
(a) The position of the methyl groups in Xylene is not given.				
4-*p*-Xylylpentadiene-1,3 (a)				
	117.5 20[30]	0.9062 21°[30]	1.53690 21°[30]	
(a) The position of the methyl groups in Xylene is not given.				

$C_{14}H_{18}$

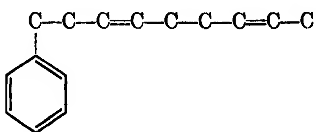
1-Phenyl-6-methylheptadiene-1,3



M. P.,°C	B. P.,°C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
	142–144 15.5[39] 146–147 15[22]	0.9508[22] 0.9486 14.9°[39]	1.58547[22] 1.58232 14.9°[39] 1.57652 $n^{20}_{H\alpha}$[22] 1.57364 $n^{14.9}_{H\alpha}$[39] 1.61105 $n^{20}_{H\beta}$[22] 1.60620 $n^{14.9}_{H\beta}$[39] 1.63249 $n^{20}_{H\gamma}$[22] 1.63025 $n^{14.9}_{H\gamma}$[39]	
2-Methyl-6-phenylheptadiene (a)				
	140–142 22[12]	0.9205 10°[12]	1.53449 13°[12] 1.53619 10°[12]	
(a) The position of the double bonds is not given.				

$C_{15}H_{20}$

1-Phenylnonadiene-3,7



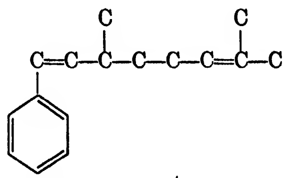
M. P.,°C	B. P.,°C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
	140–142 16[2]	0.889 D^{21}_{21}[2]	1.5105 21°[2]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Methyl-6-benzylheptadiene (a)				
	136–138 12 [12] 101–104 4 [12]	0.9289 11° [12]	1.53245 11° [12]	

(a) The position of the double bonds is not given.

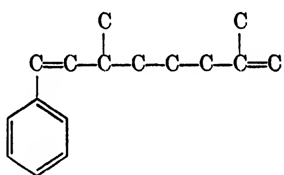
$C_{16}H_{22}$

1-Phenyl-3,7-dimethyloctadiene-1,6



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	151–152 9 [34]	0.8957 [34]	1.52849 [34]	$[\alpha]_D^{20} = -63.24°$ [34]

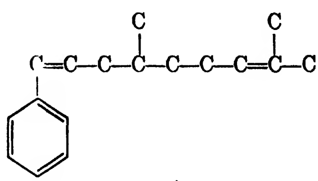
1-Phenyl-3,7-dimethyloctadiene-1,7



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	152 9.5 [23,38]	0.8947 17° [23,38]	1.5276 17° [23,38]	$[\alpha]_D^{17} = -65.11°$ [23]

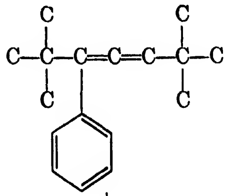
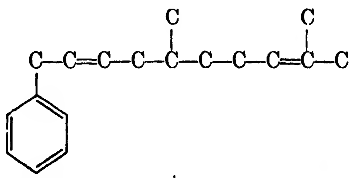
$C_{17}H_{24}$

1-Phenyl-4,8-dimethylnonadiene-1,7



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	159–160 9 [34]	0.8894 [34]	1.51765(a) [34] 1.51340(a) $n_{H\alpha}^{20}$ [34] 1.52939(a) $n_{H\beta}^{20}$ [34] 1.53964 $n_{H\gamma}^{20}$ [34]	$[\alpha]_D^{20} = -3.33°$ [34]

(a) This value is an average of two or more determinations

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2,6,6-Tetramethyl-3-phenylheptadiene-3,4 				
	78–80 1[14]	0.8808[14]	1.5039[14]	
$C_{18}H_{26}$				
1-Phenyl-5,9-dimethyldecadiene-2,8 				
	163–164 9[34]	0.8852[34] 0.8851[34]	1.50766[34] 1.50375 $n_{H\alpha}^{20}$[34] 1.51768 $n_{H\beta}^{20}$[34] 1.52629 $n_{H\gamma}^{20}$[34]	$[\alpha]_D^{20}$ – −5.76°[3]

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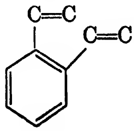
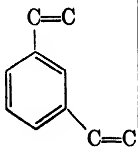
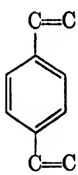
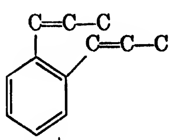
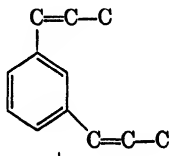
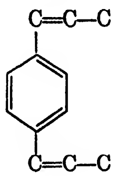
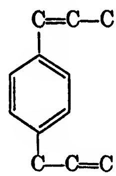
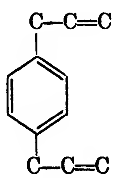
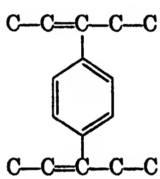
6. BENZENE WITH TWO ALKENYL SUBSTITUTIONS, C_nH_{2n-10}

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,2-Diethenylbenzene 							
	73–74	12 [5]	0.9325	22° [5]	1.57594	22° [5]	
	78.5	11 [4]	0.934	21° [3,4]	1.5760	21° [3,4]	
	73.5	11 [3]			1.56827	$n_{H\alpha}^{22}$ [5]	
					1.59630	$n_{H\beta}^{22}$ [5]	
1,3-Diethenylbenzene 							
	52	3 [3,4]	0.926	22° [3,4]	1.5745	22° [3]	
					1.5746	22° [4]	
1,4-Diethenylbenzene 							
31 [3,7]	ca.180 [6]		0.913	40° [3,7]	1.5820	40° [3,7]	
28–29 [9]	85–86	16 [9]					
	52	4 [7]					
	52	3 [3]					
$C_{12}H_{14}$							
1,2-Di-(propen-1′-yl)-benzene 							
−26 [3]	108.5–109	9 [3]	0.9263	21° [3]	1.5752	21° [3]	
	108–108.5	9 [3]	0.9185	20.5° [3]	1.5760	20.5° [3]	

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,3-Di-(propen-1′-yl)-benzene 							
	117–120	14 [3]	0.9221	24° [3]	1.5780	24° [3]	
1,4-Di-(propen-1′-yl)-benzene 							
63.6–64 [1] 63–64 [8] 63 [3]	123–125	12 [8]					
1-(Propen-1′-yl)-4-(propen-2′-yl)-benzene 							
	107–108	11 [8]	0.918	11° [8]	1.559	11° [8]	
1,4-Di-(propen-2′-yl)-benzene 							
	94	12 [8]	0.915	11° [8]	1.526	11° [8]	
$C_{16}H_{22}$							
1,4-Di-(3′-penten-2′-yl)-benzene 							
	149–151	20 [2]					

References on Benzene with Two Alkenyl Substitutions

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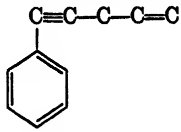
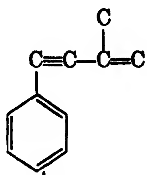
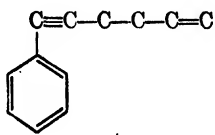
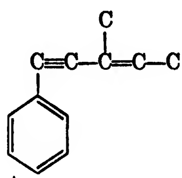
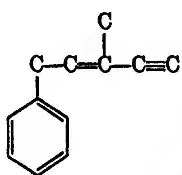
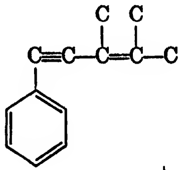
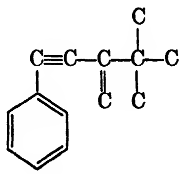
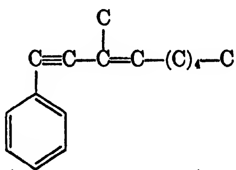
7. BENZENE WITH ONE ALKENYNYL SUBSTITUTION, C_nH_{2n-12}

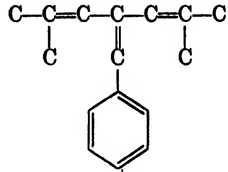
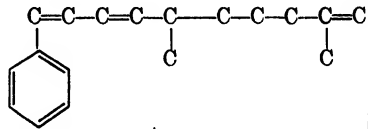
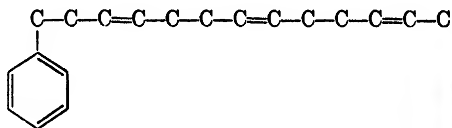
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenylpenten-4-yne-1 				
	103–105 20[5]	0.940 D_{15}^{15} [5]	1.558 18°[5]	
1-Phenyl-3-methylbuten-3-yne-1 				
	88 7[10]			
$C_{12}H_{12}$				
1-Phenylhexen-5-yne-1 				
	103–105 20[4]	0.94[4]	1.558[4]	
1-Phenyl-3-methylpenten-3-yne-1 				
	113–115 15[3,7] 102–103 9[1]	0.9305 D_{20}^{20} [1] 0.93 13°[3] 0.9301 13°[7] 0.9452 0°[3] 0.9462 D_0^0 [1]	1.5828 13°[3] 1.58281 13°[7] 1.57675 $n_{H\alpha}^{13}$ [7] 1.6046 $n_{H\beta}^{13}$ [7] 1.61954 $n_{H\gamma}^{13}$ [7]	
1-Phenyl-3-methylpenten-2-yne-4 				
	98 10[9]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-3,4-dimethylpenten-3-yne-1 				
	120–122 12[2]			
$C_{14}H_{16}$				
1-Phenyl-3-methylene-4,4-dimethylpentyne-1 				
	115–116 10[8]			
$C_{16}H_{20}$				
1-Phenyl-3-methylnonen-3-yne-1 				
	141–142 5[6]	0.9006 D_{20}^{20} [6] 0.9137 D_0^0 [6]	1.5468 19° [6]	

References on Benzene with One Alkenynyl Substitution

1. Bork, J., J. Russ. Phys. Chem. Soc. **37**, 647 **1905**; Chem. Zentr. **1905**, II, 1019.
2. Bork, J., J. Russ. Phys. Chem. Soc. **37**, 650 **1905**; Chem. Zentr. **1905**, II, 1019.
3. Brachin, M., Bull. soc. chim. [3] **35**, 1163 **1906**.
4. Grignard, V., and L. Lapayre, Bull. soc. chim. [4] **43**, 141 **1928**.
5. Grignard, V., and L. Lapayre, Compt. rend. **192**, 250 **1931**.
6. Malenok, N. M., and I. V. Sologub, J. Gen. Chem. (U.S.S.R.) **6**, 1904 **1936**; C.A. **31**, 4285 **1937**; Chem. Zentr. **1937**, I, 4093.
7. Moureu, C., Ann. chim. phys. [8] **7**, 536 **1906**.
8. Neverovich, N., J. Russ. Phys. Chem. Soc. **37**, 652 **1905**; Chem. Zentr. **1905**, II, 1020.
9. Rupe, H., and H. Hirschmann, Helv. Chim. Acta **14**, 687 **1931**.
10. Skosarevskiĭ, M., J. Russ. Phys. Chem. Soc. **37**, 645 **1905**; Chem. Zentr. **1905**, II, 1018.

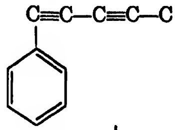
8. BENZENE WITH ONE ALKATRIENYL SUBSTITUTION, C_nH_{2n-12}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,6-Dimethyl-4-benzylideneheptadiene-2,5 				
	277–278 724[3]			
$C_{18}H_{24}$				
1-Phenyl-5,9-dimethyldecatriene-1,3,9 				
	170–173 10[2] 95 ca. 0.05[2]	0.9273[2]		$[\alpha]_D^{20}$ = +52.85°[2]
$C_{19}H_{26}$				
1-Phenyltridecatriene-3,7,11 				
	188–191 16[1]	0.898 D_{21}^{21}[1]	1.5125 21°[1]	

References on Benzene with One Alkatrienyl Substitution

1. Arbusov, B. A., and E. V. Kuznetsov, Compt. rend. acad. sci. U.R.S.S. 39, 343 1943; Survey For. Petrol. Liter., Feb. 25, 1944.
2. Rupe, H., and R. Rinderknecht, Ann. 442, 61 1925.
3. von Fellenberg, T., Ber. 39, 2064 1906.

9. BENZENE WITH ONE ALKADIYNYL SUBSTITUTION, C_nH_{2n-14}

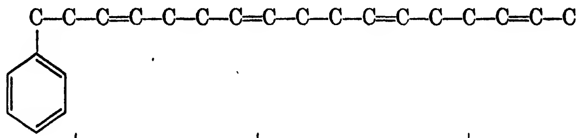
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Phenylpentadiyne-1,3 							
22.45[1]	129	20[1]	0.9745	21°[2]	1.6368	21°[2]	
22.3[2]			0.9745	18°[1]	1.6368	18°[1]	

References on Benzene with One Alkadiynyl Substitution

1. Prevost, C., Ann. chim. [10] 10, 356 1928.
2. Prevost, C., Compt. rend. 180, 1851 1925.

10. BENZENE WITH ONE ALKATETRAENYL SUBSTITUTION, C_nH_{2n-14}

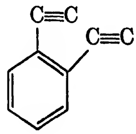
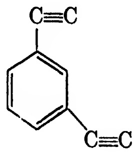
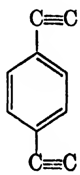
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenylheptadecatetraene-3,7,11,15				
	210–220 16[1]	0.920 D_{21}^{21}[1]	1.5135 21°[1]	



References on Benzene with One Alkatetraenyl Substitution

1. Arbusov, B. A., and E. V. Kuznetsov, Compt. rend. acad. sci. U.R.S.S. **39**, 343 **1943**; Survey For. Petrol. Liter., Feb. 25, **1944**.

11. BENZENE WITH TWO ALKYNYL SUBSTITUTIONS, C_nH_{2n-14}

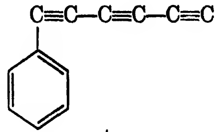
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,2-Diethynylbenzene 							
	82	14 [1,2]	0.9788	17.5° [1,2]	1.5915	17.5° [1,2]	
1,3-Diethynylbenzene 							
−2.5 [1,2]	78	15 [1,2]	0.9669	18° [1,2]	1.5841	18° [1,2]	
1,4-Diethynylbenzene 							
95 [1,3]							

References on Benzene with Two Alkynyl Substitutions

1. Deluchat, R., Ann. chim. [11] 1, 181 1934.
2. Deluchat, Compt. rend. 192, 1387 1931.
3. Lespieau and Deluchat, Compt. rend. 190, 683 1930.

12. BENZENE WITH ONE ALKATRIYNYL SUBSTITUTION, C_nH_{2n-18}

1-Phenylhexatriyne-1,3,5

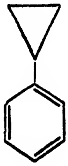
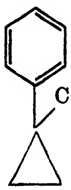
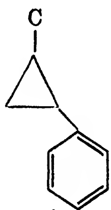
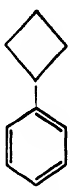


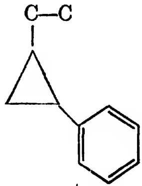
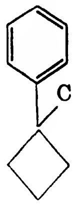
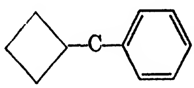
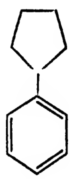
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	52 18[1]			

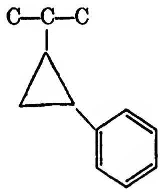
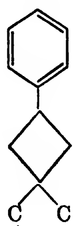
References on Benzene with One Alkatriynyl Substitution

1. Grignard, V., and Tchéoufaki, Compt. rend. **188**, 357 **1929.**

III. BENZENE WITH ALICYCLIC SUBSTITUTIONS

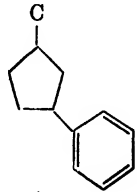
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Cyclopropylbenzene 				
−31 [33]	170.5 [33,34] 171 771 [7] 173.6 758 [29] 60–61 13 [33,34]	0.9397 [34] 0.9397 24° [33] 0.9401 D_0^{20} [29] 0.9449 D_0^{15} [29]	1.5285 [7] 1.5291 [34] 1.5312 24° [33] 1.5342 15° [29]	
$C_{10}H_{12}$				
1-Methyl-1-phenylcyclopropane 				
	91 50 [64]		1.5160 [64] 1.5150 20.4° [64]	
1-Methyl-2-phenylcyclopropane 				
	184–186 [10] 186 743 [28A]	0.925 [10] 0.9198 D_0^{20} [28A]	1.5208 [28A] 1.5237 [10]	
Cyclobutylbenzene 				
	190–191 755 [7]	0.9378 [7]	1.5277 [7]	

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Ethyl-2-phenylcyclopropane 				
	203–205 [10]	0.918 [10]	1.5162 [10]	
		0.948 17° [5]	1.5276 17° [5]	
1-Methyl-1-phenylcyclobutane 				
	208.6 [26]	0.9192 [26]	1.5132 [26]	
	69 8 [26]	0.9044 40° [26]		
Cyclobutylphenylmethane 				
		0.9556 [24]	1.5265 [24]	
Cyclopentylbenzene 				*
	216.4	0.9476		
	219.5–220.5 [19]	0.9462 [19]	1.5280 [19,68]	
	217 [68]	0.9470 [18]	1.5309 [7]	
	215–217 [67]	0.9471 [17]	1.531 [45]	
	215 [63]	0.9474 [68]	1.52867 25° [2]	
	214–215 [2]	0.9499 [7]	1.5330 23° [63]	
	213–215 [5,62]	0.9504 [45]	1.5295 19° [11,15]	
	215–218 755 [8]	0.8838 100° [19]	1.5305 19° [67]	
	216 755 [7]	0.9228 50° [19]	1.5320 17° [5]	
	216–218 750 [11,15]	0.94319 25° [2]	1.5301 15° [19]	
	215–216 750 [45]	0.9503 19° [67]		

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Cyclopentylbenzene (*Continued*)		0.9509 19° [11,15] 0.9618 0° [19] 0.9619 0° [17]	1.52461 $n^{25}_{H\alpha}$ [2] 1.53940 $n^{25}_{H\beta}$ [2]	
	102–102.6 18 [17] 102.0–102.5 18 [18]			
* $\frac{dD}{dt} = -0.0008362/°C$ (0 to 100°C)				
$C_{12}H_{16}$				
1-Isopropyl-2-phenylcyclopropane 				
	213–216 [10]	0.899 [10]	1.5072 [10]	
1-Phenyl-3,3-dimethylcyclobutane 				
	208 [49]		1.5101 25° [49]	
Methylcyclopentylbenzene (a)				
	237.5 757 [48]	0.9401 [48]	1.5287 [48]	

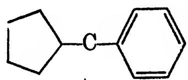
(a) The structure of this compound is not given.

1-Methyl-3-phenylcyclopentane



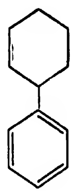
M. P.,°C	B. P.,°C	@ 760mm	D_4^{20}		n_D^{20}		Additional Data
	230–235 [5]		0.9173	17° [63]	1.5136	17° [63]	
	230–232 [22]		0.950	17° [5]	1.5276	17° [5]	
	93–94	12 [63]	0.937	16° [22]	1.5210	16° [22]	

Cyclopentylphenylmethane



M. P.,°C	B. P.,°C	@ 760mm	D_4^{20}		n_D^{20}		Additional Data
	233–235 [68]		0.9418 [24]		1.5245 [24]		
	232–234 [68]		0.9283	21° [12,15]	1.5170	21° [12,15]	
	234–236	750 [12,15]	0.9345	18° [68]	1.5206	18° [68]	
					1.5221	17° [68]	

Cyclohexylbenzene



M. P.,°C	B. P.,°C	@ 760mm	D_4^{20}		n_D^{20}		Additional Data
6.9	**238.1**		**0.9431**		**1.5249**		
7–8 [40,55]	242 [30]		0.9428 [19]		1.5234 [27]		
7 [21,31,57]	239.0 ± 0.6 [19]		0.9436 [44]		1.5237 [58]		
6.6–7.0 [9]	239 [50,51,53]		0.944 [9]		1.5254 [9]		
6.5 [6]	236–238 [41]		0.8775	100° [19]	1.5255 [44]		
6 [44]	237.5 [23]		0.9183	50° [19]	1.5260 [19]		
	235–236 [40]		0.9338	25° [39]	1.526 [23]		
	234–236 [28]		0.9339	25° [37]	1.5225	25° [37]	
	235 [39]		0.9431	25° [28]	1.527	18° [57]	
	238	770 [20]	0.9405	22° [27]	1.5274	18° [21]	
	238	761 [27]	0.9454	D_{20}^{20} [58]	1.528	16° [3]	
	238	759 [7]	0.948	D_{20}^{20} [36]	1.5288	15° [19]	
	238.6–238.8	756 [9]	0.9441	D_0^{20} [31]			
	233–234	755 [6]	0.947	16° [3]			
	239	750 [21]	0.947	15° [23]			
	236–237	746 [44]	0.9591	0° [19]			
	239	745 [31]					
	238–240	743 [3]					

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
Cyclohexylbenzene (*Continued*)					
	234–235	737[55]			
	232–235	715[58]			
	230–233	710[66]			
	156	80[20]			
	132	30[38]			
	115	15[38]			
	110–115	14[61]			
	107	13[47]			
	107–108	12.5[27]			
	106–107	12[30]			
	106	12[20]			
	105–106	10[65]			
	92	5[37]			
	76–78	2[43]			
	12.4	0.017[35]			

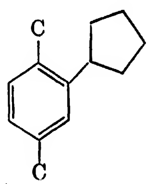
* $\frac{1}{T_b} = 0.0029920 - 0.0003460 \log_{10} p_{mm}$ (2 to 80 mm)

† $\frac{dD}{dt} = -0.0008201/°C$ (0 to 100°C)

‡ $\frac{dn}{dt} = -0.0006400/°C$ (15 to 25°C)

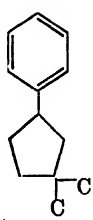
$C_{13}H_{18}$

1,4-Dimethyl-2-cyclopentylbenzene

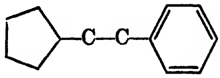
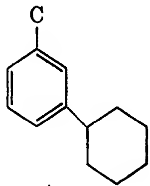
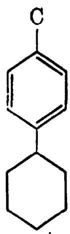
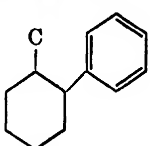


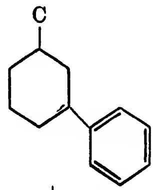
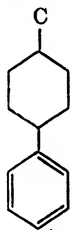
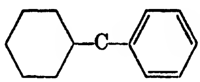
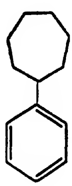
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
−44[48]	254.5–255	762[48]	0.9414[48]	1.5291[48]	

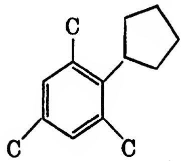
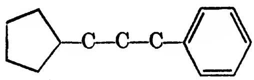
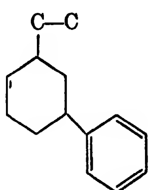
1-Phenyl-3,3-dimethylcyclopentane

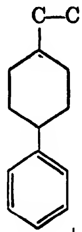
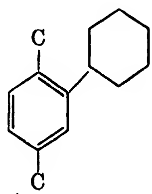
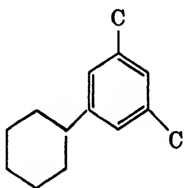


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
	242[49]			1.5269 25°[49]	

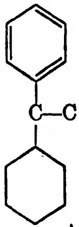
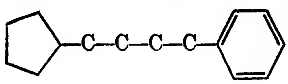
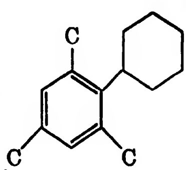
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Cyclopentyl-2-phenylethane 				
	255–256 752.5 [13] 254–256 752 [13] 254–255 751.5 [14,15]	0.9276 19° [14,15] 0.9401 19° [13]	1.5210 [13] 1.5150 19° [14,15] 1.5225 19° [13]	
1-Methyl-3-cyclohexylbenzene 				
	257–257.3 754 [32]	0.9365 18° [32]	1.5236 18° [32]	
1-Methyl-4-cyclohexylbenzene 				
	259.8–260 750 [32]	0.9351 D_0^{20} [32] 0.9365 18° [32] 0.9494 D_0^0 [32]	1.5232 18° [32]	
1-Methyl-2-phenylcyclohexane 				
	91–92 2 [34]	0.9569 18.5° [34]	1.5360 18.5° [34]	

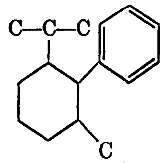
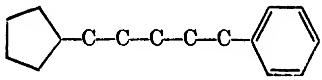
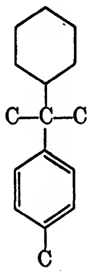
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-3-phenylcyclohexane 				
	249 730 [32] 123–124 14 [60]	0.9304 23° [60] 0.9426 D_{20}^{20} [32] 0.9412 D_0^{20} [32] 0.9425 18° [32] 0.9556 D_0^0 [32]	1.5176 26° [60] 1.5246 18° [32]	$[\alpha]_D^{20} = -5.26°$ [60]
1-Methyl-4-phenylcyclohexane 				
	130 21 [47A]	0.9442 [47A]	1.5210 [47A]	
Cyclohexylphenylmethane 				
	239.5–241.5 736 [24] 137 20 [54]	0.9281 [24] 0.9436 17° [54]	1.5132 [24] 1.5255 17° [54]	
Cycloheptylbenzene 				
	132–135 28 [54] 131–132 16 [56] 108 7 [47A]	0.9482 [47A] 0.9410 23° [54]	1.5309 [47A] 1.5217 23° [54]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Isopropylcyclopentylbenzene (a)				
	266.5 -267.5 757 [48]	0.9222 [48]	1.5190 [48]	
(a) The structure of this compound is not given.				
1,3,5-Trimethyl-2-cyclopentylbenzene 				
	276– 276.5 767 [48]	0.9435 [48]	1.5325 [48]	
1-Cyclopentyl-3-phenylpropane 				
	271– 272.5 743 [13,15]	0.9233 19° [13,15]	1.5130 19° [13,15]	
Methylcyclohexyltoluene (a)				
	257-262 [42]	0.9615 D_{20}^{20} [42]	1.5095 [42]	
(a) The structure of this compound is not given.				
1-Ethyl-3-phenylcyclohexane 				
	103-107 3 [43]			

M. P.,°C	B. P.,°C @ 760mm	D^{20}_4	n^{20}_D	Additional Data
1-Ethyl-4-phenylcyclohexane 				
	264–265 [46] 144–147 16 [46]	0.9328 [46]	1.52129 [46]	
1,4-Dimethyl-2-cyclohexylbenzene 				
	261–262 [4] 262–263 759 [3]	0.936 18° [3,4]	1.529 18° [3,4]	
1,3-Dimethyl-5-cyclohexylbenzene 				
	266–268 763 [3,4] 265–266 748 [1] 142–143 17 [1]	0.931 18° [3,4]	1.525 18° [3,4]	
Methylphenylcyclohexylmethane (a)				
	132–133 18 [59]	0.9503 [59] 0.9517 D^{20}_{20} [59] 0.9624 D^{0}_{0} [59]	1.53406 [59]	

(a) The structure of this compound is not given.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-1-cyclohexylethane 				
	264–266 [52]	0.9773 17° [52]	1.549 17° [52]	
$C_{15}H_{22}$ 1-Methyl-4-isopropylcyclopentylbenzene (a)				
	121–122 6.5 [48]	0.9227 [48]	1.5219 [48]	
(a) The position of the cyclopentyl group is not given.				
1-Cyclopentyl-4-phenylbutane 				
	289–290 754 [15]	0.9237 [15]	1.5140 [15]	
Isopropylcyclohexylbenzene (a)				
	275–280 [25]		1.5170 [25]	
(a) The structure of this compound is not given.				
1,3,5-Trimethyl-2-cyclohexylbenzene 				
	283–284.5 740 [3,4]	0.946 9° [3,4]	1.535 9° [3,4]	

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Isopropyl-2-phenyl-3-methylcyclohexane 				
	275 [27] 143–144 14 [27]	0.934 23° [27]	1.51830 [27] 1.5205 17° [27]	$[\alpha]_D^{17}$ = −3.898° [27]
1-Cyclopentyl-5-phenylpentane 				
	304–305 758 [15,16]	0.9181 [15,16]	1.5110 [15,16]	
2-Cyclohexyl-2-*p*-tolylpropane 				
	279–283 739 [4]	0.916 24° [4]	1.517 24° [4]	
$C_{17}H_{26}$ **Cyclopentylphenylhexane (a)**				
	315–317 749 [16]	0.9187 [16]	1.5128 [16]	

(a) The structure of this compound is not given.

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2. BENZENE WITH ONE CYCLENYL, ONE CYCLYLIDENYL, OR ONE CYCLYLALKENYL SUBSTITUTION, C_nH_{2n-10}

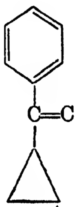
Cyclobutenylbenzene (a)

M. P.,°C	B. P.,°C @ 760mm	mm	D_4^{20}		n_D^{20}		Additional Data
25 [14,15]	118–122	12 [14]					
	120–122	10 [15]					

(a) The position of the double bond in cyclobutene is not given.

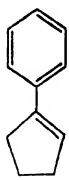
$C_{11}H_{12}$

1-Phenyl-1-cyclopropylethene



M. P.,°C	B. P.,°C @ 760mm	mm	D_4^{20}		n_D^{20}		Additional Data
	211–213	758 [23]	0.9553	D_0^{19} [23]			

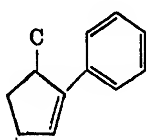
Cyclopenten-1-ylbenzene



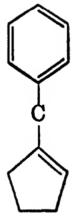
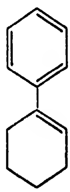
M. P.,°C	B. P.,°C @ 760mm	mm	D_4^{20}		n_D^{20}		Additional Data
23 [2,5,16]	230 [2]		0.98617	25° [5]	1.57340	25° [2,5]	
22–23 [40]	124.5–125.5	30 [40]	0.9862	25° [2]	1.5750	23° [40]	
	118–119	30 [21]	0.9875	23° [40]	1.5396	19° [55]	
	120–121	20 [2]	0.9668	19° [55]	1.56723	$n_{H\alpha}^{25}$ [2,5]	
	109	14 [2,16]			1.59017	$n_{H\beta}^{25}$ [2,5]	
	92–93	13 [55]					
	95.3	6 [16]					

$C_{12}H_{14}$

1-Methyl-2-phenylcyclopentene-2



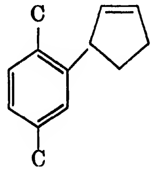
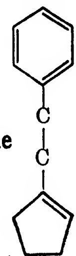
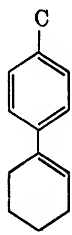
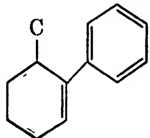
M. P.,°C	B. P.,°C @ 760mm	mm	D_4^{20}		n_D^{20}		Additional Data
	116–117	20 [2,4,21]					

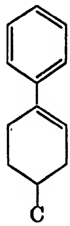
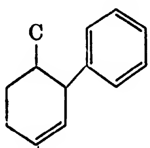
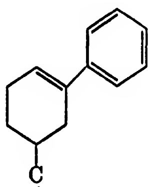
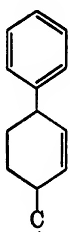
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Cyclopenten-1-ylphenylmethane 				
	113–117 18[40,41]	0.952 23°[41]	1.5415[40,41]	
	109–111 15[41]	0.9580 22°[40]	1.5355 23°[41]	
	120–122 10[10,12]	0.958 22°[41]	1.5510 17.5°[10,12]	
		0.9773 17.5°[10,12]		
Cyclohexen-1-ylbenzene 				*
		0.9908_5	1.5692_5	
−11[22]	250[3]	0.9931[54]	1.5690[53]	
	244.8[7]	0.98712 25.15°[3]	1.5694[53]	
	241–243[48,49]	0.9930 14.9°[53]	1.57179[54]	
	132 26[54]	0.9932 14.7°[53]	1.56692 25.15°[3]	†
	133 20[18,30,35,46]	0.994 14°[46]	1.569 17°[35]	
		1.008 0°[35]	1.57180 14.7°[53]	
	128–132 20[21]	1.004 D_0^0[46]	1.57157 14.2°[53]	
	131 20[3]		1.56131 $n_{H\alpha}^{25.15}$[3]	
	133 17[53]		1.56636 $n_{H\alpha}^{14.7}$[53]	
	126–127 15[53]		1.56612 $n_{H\alpha}^{14.2}$[53]	
	125–126 14[22]		1.58141 $n_{H\beta}^{25.15}$[3]	
	124–126 14[39]		1.58725 $n_{H\beta}^{14.7}$[53]	
			1.58679 $n_{H\beta}^{14.2}$[53]	
			1.60093 $n_{H\gamma}^{14.7}$[53]	
			1.60026 $n_{H\gamma}^{14.2}$[53]	
Cyclohexenylbenzene (a)				
	243.2–244.2[52]	0.9793[52]	1.5528[52]	

$* \frac{dD}{dt} = -0.0007261/°C$ (0 to 25°C)

$† \frac{dn}{dt} = -0.0004383/°C$ (14 to 25°C)

(a) The double bond is in either the 2 or 3 position.

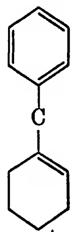
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Dimethyl-2-(cyclopenten-2′-yl)-benzene 				
	125–127 14[56]	0.9613 23°[56]	1.5380 23°[56]	
1-(Cyclopenten-1′-yl)-2-phenylethane 				
	124–125 10[11]	0.9527 20.5°[11]	1.5330 20.5°[11]	
1-Methyl-4-(cyclohexen-1′-yl)-benzene 				
	142 20[46]	0.971 12°[46] 0.981 D_0^0[46]		
1-Methyl-2-phenylcyclohexene-2 				
	128 6[37]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-4-methylcyclohexene-1 				
	147 23 [35,46,47]	0.9716 14° [46,47] 0.9846 0° [46,47]	1.536 17° [35] 1.555 14° [47]	
1-Methyl-2-phenylcyclohexene-3 				
	110–113 12 [33]			
2-Phenyl-4-methylcyclohexene-1 				
	145 20 [36]	0.9702 [36] 0.9859 0° [36]	1.555 [36]	
1-Phenyl-4-methylcyclohexene-2 				
	132 15–16 [30]			

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Methyl-3-phenylcyclohexene (a)							
	248–252 [25]		0.9581	22° [25]	1.5402	22° [25]	
	146–150	32 [25]					
	128–130	17 [25]					

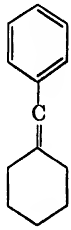
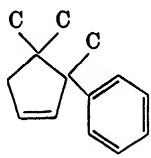
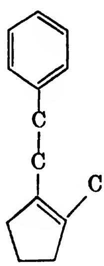
(a) The double bond is in either the 4 or 5 position.

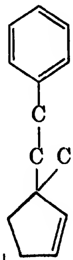
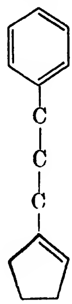
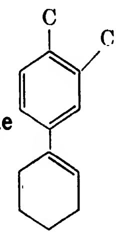
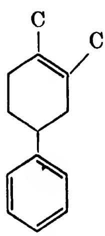
Phenylcyclohexen-1-ylmethane

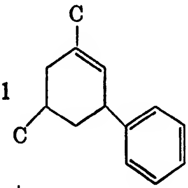
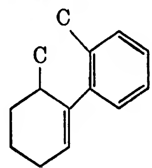
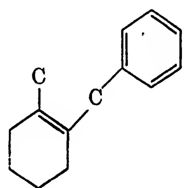
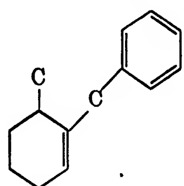


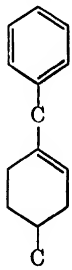
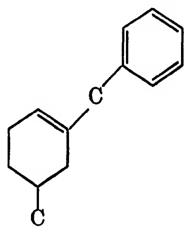
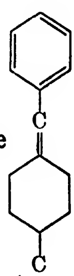
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
							*
			0.9632				
	139–141	22 [53]	0.9634 [27,29]		1.5400 [27,29]		
	132–133	19 [53]	0.964 [18]		1.5407 [18]		
	133–134	15 [53]	0.9656	14.3° [53]	1.5416 [53]		
	127.2–128.4	15 [27,29]	0.9663	13.7° [53]	1.5437 [53]		
	133	14 [18]	0.9678	13.4° [53]	1.5449 [53]		
	125	13 [53]	0.9680	13.2° [53]	1.5453 [53]		
	125	11.5 [53]	0.9802	0° [51]	1.54774	14.6° [53]	
					1.54426	14.1° [53]	
					1.54651	13.7° [53]	
					1.54769	13.2° [53]	
					1.54327	$n_{H\alpha}^{14.6}$ [53]	
					1.54009	$n_{H\alpha}^{14.1}$ [53]	
					1.54202	$n_{H\alpha}^{13.7}$ [53]	
					1.54303	$n_{H\alpha}^{13.2}$ [53]	
					1.56043	$n_{H\beta}^{14.6}$ [53]	
					1.55601	$n_{H\beta}^{14.1}$ [53]	
					1.55879	$n_{H\beta}^{13.7}$ [53]	
					1.55994	$n_{H\beta}^{13.2}$ [53]	
					1.57093	$n_{H\gamma}^{14.6}$ [53]	
					1.56577	$n_{H\gamma}^{14.1}$ [53]	
					1.56939	$n_{H\gamma}^{13.7}$ [53]	
					1.57070	$n_{H\gamma}^{13.2}$ [53]	

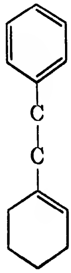
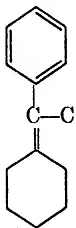
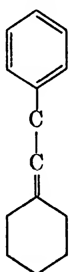
* $\frac{dD}{dt} = -0.0007737/°C$ (0 to 20°C)

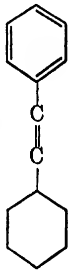
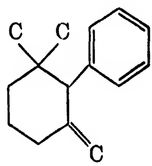
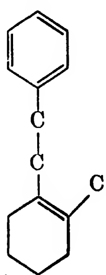
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Benzylidenecyclohexane 				
−36– −38[42]	122–123 11[44] 117–118.5 10[27] 117–118 10[28] 116 9[42]	0.9579[27,28] 0.9663 23°[42] 0.9640 17°[44]	1.5437[27,28] 1.55674 23°[42] 1.53950 17°[44]	
$C_{14}H_{18}$				
1,1,2-Trimethyl-2-phenylcyclopentene-3 				
	195–200 40[6]			
1-Phenethyl-2-methylcyclopentene-1 				
	143–144 22[26]	0.93747 20.3°[26] 0.93644 18.5°[26]	1.52391 20.3°[26] 1.52523 18.5°[26]	

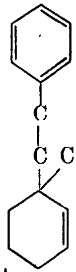
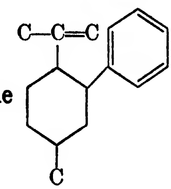
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-1-phenethylcyclopentene-2 				
	142 23[26]	0.93055 16.3°[26]	1.52148 16.3°[26]	
1-(Cyclopenten-1′-yl)-3-phenylpropane 				
	117–118 3[11]	0.9471 18.5°[11]	1.5330 18.5°[11]	
1,2-Dimethyl-4-(cyclohexen-1′-yl)-benzene 				
	277–278[20] 167–169 5–6[20]			
1,2-Dimethyl-4-phenylcyclohexene-1 				
	128–130 11[1]			

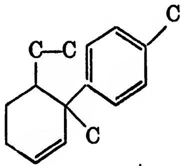
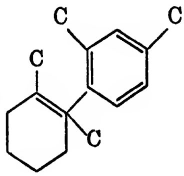
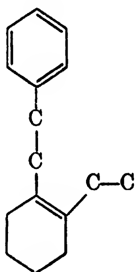
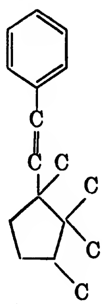
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,5-Dimethyl-3-phenylcyclohexene-1 				
	141–143 23[53]	0.942[53]	1.5431[53]	
	131 14[34]	0.9460 15.5°[53]	1.53617 15.3°[53]	
		0.9462 15.3°[53]	1.53131 $n_{H\alpha}^{15.3}$[53]	
			1.54773 $n_{H\beta}^{15.3}$[53]	
			1.55799 $n_{H\gamma}^{15.3}$[53]	
1-Methyl-2-*o*-tolylcyclohexene-2 				
	158–160 12[37]	0.961[37]	1.541[37]	
		0.985 0°[37]		
1-Methyl-2-benzylcyclohexene-1 				
	158–160 19[9]	0.9938 17.8°[9]	1.5445 17.8°[9]	
1-Methyl-2-benzylcyclohexene-2 				
	170 42[37]	0.981 18°[37]	1.453 18°[37]	
		0.99 0°[37]		

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Benzyl-4-methylcyclohexene-1 				
	160 30[47] 133 15[50]	0.9567 16°[47] 0.9687 0°[47]	1.542 16°[47]	
2-Benzyl-4-methylcyclohexene-1 				
	271[36] 156 20[36]	0.9591[36] 0.9693 0°[36]	1.547[36]	
1-Benzylidene-4-methylcyclohexane 				
	136–137 15[50]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenethylcyclohexene-1 				
	145 10 [8] 112–113 2 [19]	0.9587 15° [8]	1.5351 19.7° [8] 1.5402 13.7° [19]	
1-Phenyl-1-cyclohexylidene-ethane 				
	142–143 15 [52A]	0.9573 [52A] 0.9590 D_{20}^{20} [52A] 0.9624 D_0^0 [52A]	1.5401 [52A]	
1-Phenyl-2-cyclohexylidene-ethane 				
	126–126.5 3 [52A]	0.9908 [52A] 0.9926 D_{20}^{20} [52A] 1.0052 D_0^0 [52A]	1.5540 [52A]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2-cyclohexylethene 				
	145–147 14[44] 145–147 8[52A]	0.9595 17°[44]	1.53701 17°[44]	
$C_{15}H_{20}$				
1,1-Dimethyl-2-phenyl-3-methylenecyclohexane 				
	105–107 5[17]	0.9403 11°[17]	1.53117 11°[17]	
1-Phenethyl-2-methylcyclohexene-1 				
	161–163 23[26] 153–154 14[26]	0.95644[26] 0.95142 19.4°[26]	1.53804[26] 1.53617 19.4°[26]	

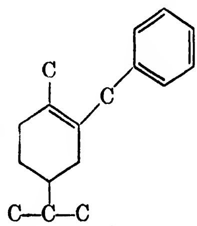
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Methyl-1-phenethylcyclohexene-2 							
	152–153	20 [26]	0.93492	17.6° [26]	1.52695	17.6° [26]	
$C_{16}H_{22}$							
Cyclopentenylphenylpentane (a)							
	157–158	3 [13]	0.9351 [13]		1.5225 [13]		
(a) The structure of this compound is not given.							
1-Isopropenyl-2-phenyl-4-methylcyclohexane 							
	139–140	10 [24]	0.9462	15.7° [24]	1.5802	15.7° [24]	
1-(4′-Isopropylphenyl)-5-methylcyclohexene (a)							
	157–158 149–150	14 [25] 12 [25]	0.9376	14° [25]	1.5283	14° [25]	
(a) The double bond is in the 2 or 3 position.							
1-Isopropyl-2-phenyl-4-methylcyclohexene (a)							
	149–151 127–130	18 [43] 8 [43]	0.9365	25° [43]	1.5270 [43] 1.5275 [43]		$[\alpha]_D^{17}$ = +43.48° [43] $[\alpha]_D^{17}$ = +16.28° [43]
(a) The position of the double bond is not given.							

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Ethyl-2-methyl-2-*p*-tolylcyclohexene-3 				
	136–137 12[32]			
1,2-Dimethyl-2-(2′,4′-dimethylphenyl)-cyclohexene-3 				
	155–158 12[31]			
1-Phenethyl-2-ethylcyclohexene-1 				
			1.5306 13.7°[19]	
$C_{17}H_{24}$				
1-(1′,2′,2′,3′-Tetramethylcyclopentyl)-2-phenylethene 				
51[45]	146–149 11[45]			

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
Cyclopentenylphenylhexane (a)							
	159–160	2[13]	0.9317	18.5°[13]	1.5220	18.5°[13]	

(a) The structure of this compound is not given.

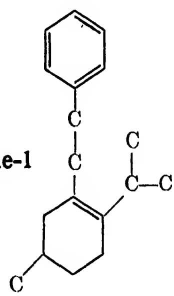
1-Methyl-2-benzyl-4-isopropylcyclohexene-1



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	159	12[9]	0.9448	15.8°[9]	1.5331	15.8°[9]	

$C_{18}H_{26}$

1-Phenethyl-2-isopropyl-5-methylcyclohexene-1



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	145	4[38]					

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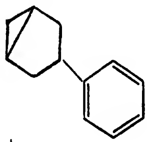
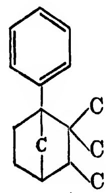
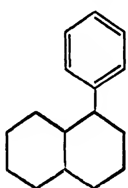
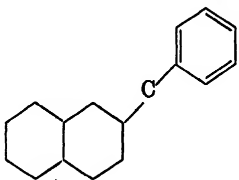
3. BENZENE WITH ONE BICYCLYL SUBSTITUTION, C_nH_{2n-10}

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
3-Phenylbicyclo-[3,1,0]-hexane (a) 							
	241.5–242.5	745 [9]	0.9830 [9]		1.5452	16.5° [9]	
(a) This compound may not be pure.							
$C_{16}H_{22}$							
1-Phenyl-2,2,3-trimethylbicyclo-[2,2,1]-heptane 							
13.5 [6,7]	147.5–148	14 [6,7]	0.9817 [6]		1.5387 [6]		
Phenyldihydropinene (a)							
	286–291	745 [5]	0.9594	D_0^{20} [5]	1.52691 [5]		
(a) This compound is probably a phenyltrimethylbicycloheptane.							
Bornylbenzene (a)							
	276–278.5	756 [3]	0.9586	D_0^{20} [3]	1.5262	25° [4]	
	117–118	1.5 [4]	0.9788	D_0^{0} [4]	1.5275	21° [3]	
(a) This compound is probably a phenyltrimethylbicycloheptane.							
2-Phenylbicyclo-[4,4,0]-decane 							
	163–164	13 [2]	0.9799	14° [2]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
ω-Benzylcamphene (a)				
	138–140 5[8]	0.9668 25°[8]	1.538 25°[8]	
(a) This compound is probably a benzylbicycloheptane.				
***p*-Bornyltoluene** (a) (b)				
	163–164 11[3]	0.9563 D_0^{20}[3]	1.5297[3]	
(a) This compound is probably a trimethylbicycloheptyltoluene. (b) This compound may not be pure.				
3-Benzylbicyclo-[4,4,0]-decane 				
	173–175 10[1]			

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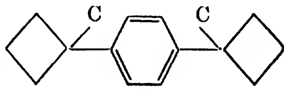
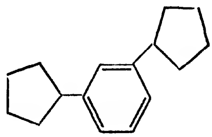
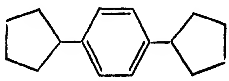
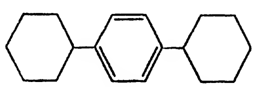
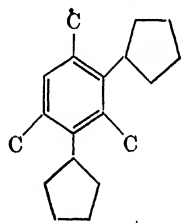
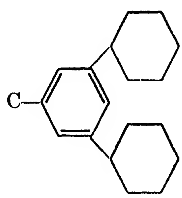
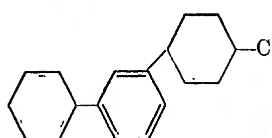
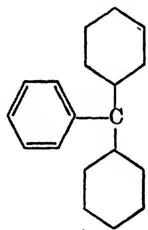
4. BENZENE WITH TWO CYCLYL SUBSTITUTIONS, C_nH_{2n-10}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Di-(1′-methylcyclobutyl)-benzene 				
34 [9]	123–125 6 [9]	0.9344 [9] 0.9198 40° [9]	1.5203 [9]	
1,3-Dicyclopentylbenzene 				
	154–155 4 [13]			
1,4-Dicyclopentylbenzene 				
42–43 [13]				
$C_{17}H_{24}$ **Methyldicyclopentylbenzene** (a)				
	150–152 2 [17]	0.9694 [17]	1.5391 [17]	
(a) The structure of this compound is not given.				
$C_{18}H_{26}$ **Dicyclopentylmethylbenzene** (a)				
101.5–102 [8]				
(a) The structure of this compound is not given.				
1,4-Dicyclohexylbenzene 				
102.0				
103 [10] 102–103 [4,5,20,21] 102 [15]	189–190 14 [21] 192–195 13 [4] 190 12 [10]	1.049 0° [26]		

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Dicyclohexylbenzene (*Continued*)				
101–102 [12]				
100–102 [11]				
101 [24]				
100–101 [6,19]				
100 [22,23]				
Dicylohexylbenzene (a)				
86 [24]	335–340 756 [5]	0.966 [5]	1.5357 [5]	
	165–168 3.5 [12]	0.9668 [12]	1.5362 [12]	
(a) The structure of this compound is not given.				
$C_{19}H_{28}$				
1,3,5-Trimethyl-2,4-dicyclopentylbenzene 				
	164–165 1 [17]	0.9870 [17]	1.5227 [17]	
1-Methyl-3,5-dicyclohexylbenzene 				
93.5 [22]				
Methyldicyclohexylbenzene (a)				
–3 [17]	165–166 3 [17]	0.9645 [17]	1.5378 [17]	
(a) The structure of this compound is not given.				
1-Cyclohexyl-3-(4′-methylcyclohexyl)-benzene 				
	194–198 8 [16]	0.9552 [16]	1.5202 [16]	

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Methyldicyclohexylbenzene (a)				
82[24]				
(a) The structure of this compound is not given.				
Phenyldicyclohexylmethane 				
36.5[14]	210–212 20[7,25] 146–148 5[18] 145–148 5[18] 169–171 3[1] 161–163 2[1]	0.9774[18] 0.9890[25] 0.9724 D_{25}^{25}[1] 0.9894 13°[7]	1.5390[18] 1.5391[18] 1.5372 25°[1]	
$C_{20}H_{30}$ **Dicyclohexyl-1,3-dimethylbenzene (a)**				
107[10]				
(a) The structure of this compound is not given.				
Dicylclohexyl-1,4-dimethylbenzene (a)				
156–157[2] 155–156[3]				
(a) The position of the cyclohexyl substituents is not given.				
Dimethyldicyclohexylbenzene (a)				
	230–235 20[2]	0.962 22°[2]	1.533 22°[2]	
(a) The structure of this compound is not given.				

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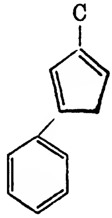
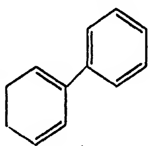
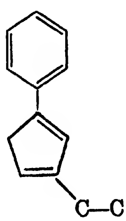
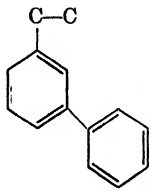
5. BENZENE WITH ONE CYCLODIENYL, ONE ALKENYLCYCLENYL, OR ONE DIALKENYLCYCLYL SUBSTITUTION, C_nH_{2n-12}

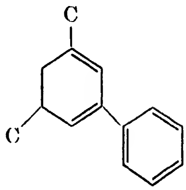
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
1-Methyl-4-phenylcyclopentadiene-1,4					
62 [5]	151	12 [5]			
Benzylcyclopentadiene (a)					
	115–120	13 [1]			
(a) The position of benzyl is given as 1 or 2 and the position of the double bonds is not given.					
2-Phenylcyclohexadiene-1,3					
	114	12 [7]			
Phenylcyclohexadiene (a)					
66–66.5 [8]	247–249 [2]				
	110	10 [12]			
(a) The structures were not given. The data may represent more than one compound.					
$C_{13}H_{14}$					
1-Phenyl-3-ethylcyclopentadiene-1,3					
	170–175	12 [5]			

1-Ethyl-3-phenylcyclohexadiene-1,3



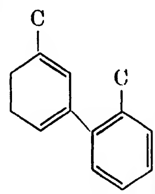
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	126–128	8 [4]					

1,5-Dimethyl-3-phenylcyclohexadiene-1,3



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	148	17 [14]	0.973 [6]		1.5735 [14]		
	146	17 [6]	0.9718	17.5° [11]	1.5800 [6]		
			0.9772	17.0° [14]	1.57486	17.0° [14]	
					1.56824	$n_{H\alpha}^{17.0}$ [14]	
					1.59322	$n_{H\beta}^{17.0}$ [14]	
					1.61083	$n_{H\gamma}^{17.0}$ [14]	

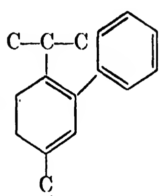
1-Methyl-3-*o*-tolylcyclohexadiene-1,3



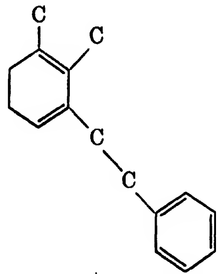
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	145–148	21 [9]					

$C_{16}H_{20}$

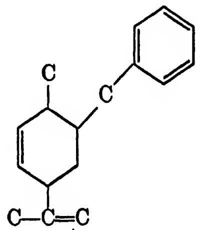
1-Isopropyl-2-phenyl-4-methylcyclohexadiene-1,3



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	153	18 [13]	0.9552	25° [10]	1.5525	25° [10]	
	145–148	15 [10]					

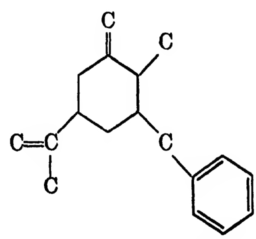
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Dimethyl-3-phenethylcyclohexadiene-1,3 				
	155 6[3]			

$C_{17}H_{22}$

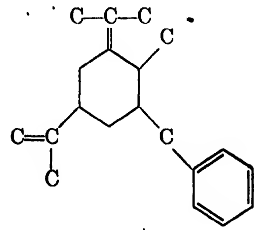
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-2-benzyl-4-isopropenylcyclohexene-5 				
	167–169 14[11]			$[\alpha]_D^{20} = -71.76°$[11] (a)

(a) Angles of rotation for lines other than D are given in reference 11.

$C_{18}H_{24}$

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methylene-2-methyl-3-benzyl-5-isopropenylcyclohexane 				
	169–172 11[11]	0.9456[11]	1.54718[11]	$[\alpha]_D^{20} = -7.25°$[11] (a)

(a) Angles of rotation for lines other than D are given in reference 11.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Isopropylidenyl-2-methyl-3-benzyl-5-isopropenylcyclohexane				
	183–186 13[11]			$[\alpha]_D^{20}$ = −13.36°[11] (a)

(a) Angles of rotation for lines other than D are given in reference 11.

References on Benzene with One Cyclodienyl, One Alkenylcyclenyl, or Dialkenylcyclyl Substitution

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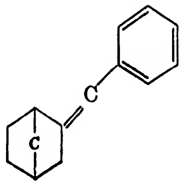
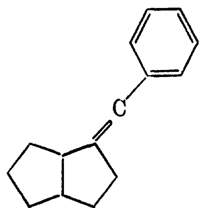
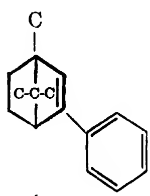
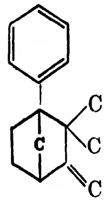
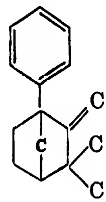
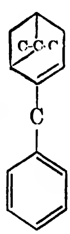
6. BENZENE WITH ONE BICYCLENYL, ONE ALKENYLBICYCLYL, OR ONE BICYCLYLIDENE SUBSTITUTION, C_nH_{2n-12}

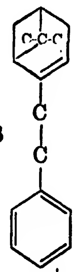
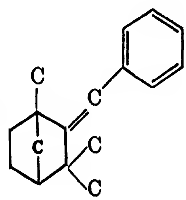
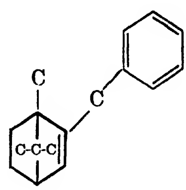
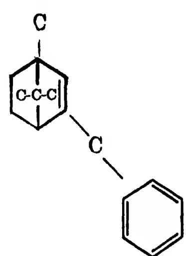
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
2-Benzylidenebicyclo-[2,2,1]-heptane 							
	146–147	15 [7]					
$C_{15}H_{18}$							
Phenyl-7,7-dimethylbicyclo-[2,2,1]-heptene-2 (a)							
	135	13 [14]	0.9907 [14]		1.54466	19° [14]	
(a) The position of the phenyl group is not given.							
2-Benzylidene-*cis*-[3,3,0]-bicyclooctane 							
	126–127	3 [1]					
$C_{16}H_{20}$							
1,7,7,-Trimethyl-3-phenylbicyclo-[2,2,1]-heptene-2 							
	138 –141(a)	10 [8]	0.9767(b) [17]		1.54167(b) [17]		$[\alpha]_D^{20} =$ +8.33°(b)[17]
			0.9784(b) [17]		1.54445(b) [17]		$[\alpha]_D^{20} =$ +40.56°(b)[17]
			0.9865(b) [17]		1.53724(b)	$n_{H\alpha}^{20}$ [17]	(c)
			0.9736(a)	D_{11}^{18} [8]	1.54010(b)	$n_{H\alpha}^{20}$ [17]	
					1.55331(b)	$n_{H\beta}^{20}$ [17]	
					1.55575(b)	$n_{H\beta}^{20}$ [17]	

(a) This compound was named β-phenylcamphene by the authors, but the structure indicates that it is 1,7,7-Trimethyl-3-phenylbycyclo-[2,2,1]-heptene-2.

(b) Values for two preparations are given.

(c) Angles of rotation for lines other than *D* are given in reference 17.

M. P., °C	B. P., °C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2,2-dimethyl-3-methylenebicyclo-[2,2,1]-heptane 					
32.5 [10,11]	128–129	7 [10,11]	0.9919 [10,11]	1.5449 [10,11]	
1-Phenyl-2-methylene-3,3-dimethylbicyclo-[2,2,1]-heptane 					
	147	16 [10,11]	0.9795 [10,11]	1.5447 [10,11]	
	131	9.5 [10,11]			
Phenylmethylenedimethylbicycloheptane (a)					
	99	2 [2]	0.9920 140° [2]		$[\alpha]_D^{19}$ = +3.27° [2]
(a) The structure of this compound is not given.					
4-Benzyl-7,7-dimethylbicyclo-[3,1,1]-heptene-3 					
	138–141	12 [16]	0.9712 [16]		$[\alpha]_D^{20}$ = +29.486° [16] (a)
(a) Angles of rotation for lines other than D are given in reference 16.					

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4-Phenethyl-7,7-dimethylbicyclo-[3,1,1]-heptene-3 				
	151–152 10[16]	0.9633[16]		$[\alpha]_D^{20}$ = +16.182°[16] (a)
(a) Angles of rotation for lines other than *D* are given in reference 16.				
1,3,3-Trimethyl-2-benzylidenebicyclo-[2,2,1]-heptane 				
	152–154 14–15[9]		1.5472 $n_{H\gamma}^{19.9}$	$[\alpha]_D^{18}$ = +71.89°[9]
1,7,7-Trimethyl-2-benzylbicyclo-[2,2,1]-heptene-2 				
	170–171 20[8] 160–161 10[8] 157–160 10[8]			
1,7,7-Trimethyl-3-benzylbicyclo-[2,2,1]-heptene-2 				
	150–160 11[8]			

2-Benzyloctahydronaphthalene (a)

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	151 6[4]		1.5520 12.8°[4]	
	145(b) 3[1]			

(a) The positions of the hydrogen atoms are not given.
(b) This constant was determined on the *trans* isomer.

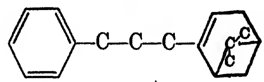
$C_{18}H_{24}$

1,7,7-Trimethyl-ethyl-phenylbicyclo-[2,2,1]-heptene-2 (a)

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	165–168 12[15]			

(a) The positions of ethyl and phenyl are not given.

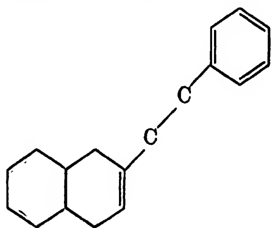
1-Phenyl-3-[4′-(7′,7′-dimethylbicyclo-[3,1,1]-hepten-3′-yl)]-propane



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	167.5 –168 10.5[16]	0.9574[16]	1.53116[16]	$[\alpha]_D^{20}$ = –4.5787°[16] (a)
	166–167 10[16]		1.52715 $n_{H\alpha}^{20}$[16]	
			1.54119 $n_{H\beta}^{20}$[16]	

(a) Angles of rotation for lines other than *D* are given in reference 16.

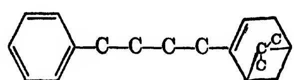
3-Phenethylbicyclo-[4,4,0]-decene-3



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	155 3–4[3]		1.5402 18.7°[3]	
	148–149 0.9[5]		1.5449 16.7°[5]	

$C_{19}H_{26}$

1-Phenyl-4-[2′-(7′,7′-dimethylbicyclo-[3,1,1]-hepten-2′-yl)]-butane



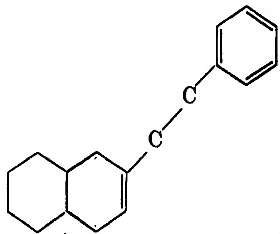
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	182.5 –183.5 10[16]	0.9522[16]		$[\alpha]_D^{20}$ = +4.957°[16] (a)

(a) Angles of rotation for lines other than *D* are given in reference 16.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Benzylidenecamphane (a)				
25 [12,13,18]	160–161 10–11 [12,18]	0.9753 30° [12,13] 0.9788 25° [12,13]	1.56280 30.2° [12] 1.55717 $n_{H\alpha}^{30.2}$ [12] 1.57768 $n_{H\beta}^{30.2}$ [12] 1.59116 $n_{H\gamma}^{30.2}$ [12]	

(a) This compound is probably a benzylidene-2,2,3-trimethylbicyclo-[1,2,2]-heptane.

3-(2′-Methylphenethyl)-bicyclo-[4,4,0]-decene-3

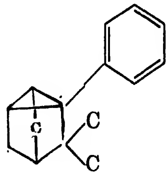
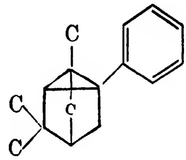


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	160–162 0.7 [6]			

References on Benzene with One Bicyclenyl, Alkenylbicyclyl, or Bicyclylidene Substitution

1. Barrett, J. W., and R. P. Linstead, J. Chem. Soc. 1936, 611.
2. Bredt, J., J. prakt. Chem. [2] 98, 96 1918.
3. Cook, J. W., and C. L. Hewett, J. Chem. Soc. 1934, 365.
4. Cook, J. W., and C. L. Hewett, J. Chem. Soc. 1936, 62.
5. Cook, J. W., and C. A. Lawrence, J. Chem. Soc. 1937, 817.
6. Cook, J. W., A. M. Robinson, and F. Goulden, J. Chem. Soc. 1937, 393.
7. Diels, O., and K. Alder, Ann. 470, 62 1929.
8. Haller, A., and E. Bauer, Compt. rend. 142, 677 1906.
9. Leroide, J., Compt. rend. 148, 1611 1909.
10. Nametkin, S., A. Kichkin, and D. Kursanov, J. prakt. Chem. [2] 124, 144 1929.
11. Nametkin, S. S., A. S. Kichkin, and D. N. Kursanov, J. Russ. Phys. Chem. Soc. 61, 1065 1929; Chem. Zentr. 1930, I, 1300.
12. Nametkin, S. S., and M. K. Strugatzkiĭ, Ber. 69, 2272 1936.
13. Nametkin, S. S., and M. K. Strugatzkiĭ, J. Gen. Chem. (U.S.S.R.) 6, 862 1936; C.A. 30, 6727 1936; Chem. Zentr. 1937, I, 1953.
14. Nordström, A. M., Hyllningsskrift tillägnad Ossian Aschan 1920, 129; C.A. 16, 2135 1922.
15. Rupe, H., and K. Glenz, Ann. 436, 184 1924.
16. Rupe, H., and A. Héritier, Ann. 459, 171 1927.
17. Rupe, H., and A. Wirz, Verhandl. naturforsch. Ges. Basel 38, 164 1927.
18. Shavrygin, A. I., J. Gen. Chem. (U.S.S.R.) 7, 2668 1937; Chem. Zentr. 1938, I, 3056.

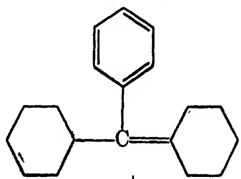
7. BENZENE WITH ONE TRICYCLYL SUBSTITUTION, C_nH_{2n-12}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Phenyl-3,3-dimethyltricyclo-[2,2,1,0 ^{2,6}]-heptane 				
	96–97 5[1]	1.00609 10.25°[1]	1.54710 10.25°[1]	
$C_{16}H_{20}$				
1,5,5-Trimethyl-2-phenyltricyclo-[2,2,1,0 ^{2,6}]-heptane 				
	127–128 11[2]	0.9708[2]	1.53202[2]	

References on Benzene with One Tricyclyl Substitution

1. Bredt-Savelsberg, M., Ber. 56, 554 1923.
2. Komppa, G., and G. A. Nyman, Ann. 533, 290 1938.

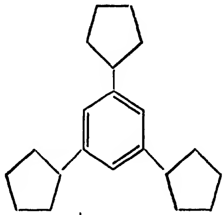
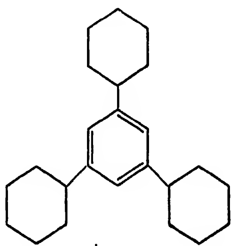
8. BENZENE WITH ONE CYCLYL AND ONE CYCLENYL OR CYCLYLIDENE SUBSTITUTION, C_nH_{2n-12}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Cyclohexyl-4-cyclohexenylbenzene (a)				
97–98 [4]	225–230 18 [4]			
(a) The position of the double bond in cyclohexene is not given.				
Methylcyclohexylcyclohexenylbenzene (a)				
108–110 [4]	165 0.7 [4]			
(a) The structure of this compound is not given.				
Phenylcyclohexylcyclohexylidenemethane 				
45 [3]	178 11 [3] 180 10 [2] 134–135 0.3 [1]	0.982 23° [1]	1.545 23° [1]	

References on Benzene with One Cyclyl and One Cyclenyl or Cyclylidene Substitution

1. Conant, J. B., L. F. Small, and A. W. Sloan, J. Am. Chem. Soc. 48, 1743 1926.
2. Godchot, M., Bull. soc. chim. [4] 7, 956 1910.
3. Neunhöffer, O., Ann. 509, 115 1934.
4. von Braun, J., G. Irmisch, and J. Nelles, Ber. 66, 1471 1933.

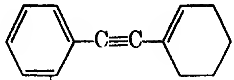
9. BENZENE WITH THREE CYCLYL SUBSTITUTIONS, C_nH_{2n-12}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5-Tricyclopentylbenzene 				
60–61 [2]	201–202 4 [2]			
$C_{24}H_{36}$				
1,3,5-Tricyclohexylbenzene 				
68.5–69 [1] 68 [3]				

References on Benzene with Three Cyclyl Substitutions

1. Corson, B. B., and V. N. Ipatieff, J. Am. Chem. Soc. **59, 645 1937.**
2. Nametkin, S. S., and E. S. Pokrovskaya, J. Gen. Chem. (U.S.S.R.) **8, 699 1938;** C.A. **33, 1298 1939.**
3. Tsukervanik, I. P., and N. G. Sidorova, J. Gen. Chem. (U.S.S.R.) **7, 641 1937;** C.A. **31, 5780 1937;** Chem. Zentr. **1938,** I, 579.

10. BENZENE WITH ONE CYCLENYLALKYNYL SUBSTITUTION, C_nH_{2n-14}

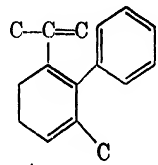
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Phenylcyclohexen-1-ylethyne 				
	167–170 16[2] 117–118.5 1.5[3]	0.9391[3]	1.6033[3]	
$C_{15}H_{16}$ **Phenyl-3-methylcyclohexenylethyne (a)**				
	167–168 10[1]			

(a) The double bond is in either the one or the six position of the cyclohexene.

References on Benzene with One Cyclenylalkynyl Substitution

1. Bertrond, E., J. Russ. Phys. Chem. Soc. 37, 655 1905; Chem. Zentr. 1905, II, 1020.
2. Hurd, C. D., and R. N. Jones, J. Am. Chem. Soc. 56, 1924 1934.
3. Pinkney, P. S., G. A. Nesty, D. E. Pearson, and C. S. Marvel, J. Am. Chem. Soc. 59, 2666 1937.

11. BENZENE WITH ONE ALKENYLCYCLODIENYL SUBSTITUTION, C_nH_{2n-14}

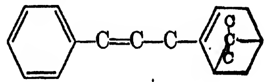
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Methylenecyclopentadienylbenzene (a)				
31[3]				
(a) The structure of this compound is not given.				
$C_{13}H_{12}$ Methylenecyclopentadienylmethylbenzene (a)				
	130.5 10.5[3]	1.021 D_{20}^{20}[1]		
(a) The structure of this compound is not given.				
$C_{16}H_{18}$ 1-Isopropenyl-2-phenyl-3-methylcyclohexadiene-1,3 				
	149–150 10[2]	0.9714[2]	1.56736[2] 1.56106 $n_{H\alpha}^{20}$[2] 1.58273 $n_{H\beta}^{20}$[2] 1.59686 $n_{H\gamma}^{20}$[2]	$[\alpha]_D^{20} =$ +67.28°[2] (a)
(a) Angles of rotation for lines other than D are given in reference 2.				

References on Benzene with One Alkenylcyclodienyl Substitution

1. Lovell, W. G., J. M. Campbell, F. K. Signaigo, and T. A. Boyd, Ind. Eng. Chem. **26**, 475 **1934.**
2. Rupe, H., and W. Tomi, Ber. **47**, 3064 **1914.**
3. Thiele, J., Ber. **33**, 666 **1900.**

12. BENZENE WITH ONE BICYCLENYLALKENYL SUBSTITUTION, C_nH_{2n-14}

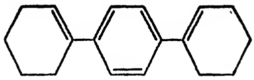
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-3-[4'-(7',7'-dimethylbicyclo-[3,1,1]-hepten-3'-yl)]-propene-1				
	167.5 -168.5 10[2]	0.9683[2]	1.54534[2] 1.54074 $n_{H\alpha}^{20}$ [2]	$[\alpha]_D^{20}$ = +13.050°[2] (a)
(a) Angles of rotation for lines other than *D* are given in reference 2.				
1-Phenyl-1-camphenylethene (a)				
	126–127 0.19[1] 104–105.5 0.07[1]	1.0033 10.3°[1]		
(a) The structure of this compound is not given.				



References on Benzene with One Bicyclenylalkenyl Substitution

1. Lipp, P., and M. Quaedrlieg, Ber. 62, 2311 1929.
2. Rupe, H., and A. Héritier, Ann. 459, 171 1927.

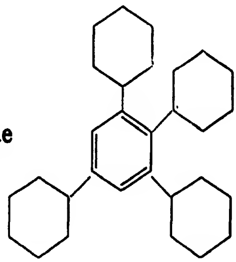
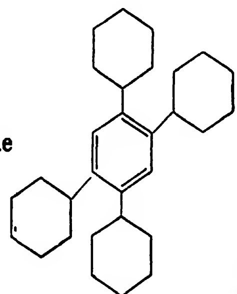
13. BENZENE WITH TWO CYCLENYL SUBSTITUTIONS, C_nH_{2n-14}

M. P.,°C	B. P.,°C @ 760mm	D^{20}_{4}	n^{20}_{D}	Additional Data
1,4-(Dicyclohexen-1′-yl)-benzene 				
110[1]				

References on Benzene with Two Cyclenyl Substitutions

1. von Braun, J., G. Irmisch, and J. Nelles, Ber. 66, 1471 1933.

14. BENZENE WITH FOUR CYCLYL SUBSTITUTIONS, C_nH_{2n-14}

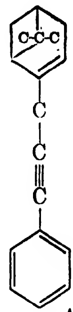
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetracyclopentylbenzene (a)				
200–201 [3]				
(a) The structure of this compound is not given.				
$C_{30}H_{46}$				
1,2,3,5-Tetracyclohexylbenzene 				
264–265 [1]				
1,2,4,5-Tetracyclohexylbenzene 				
265–266 [2]				

References on Benzene with Four Cyclyl Substitutions

1. Corson, B. B., and V. N. Ipatieff, J. Am. Chem. Soc. 59, 645 1937.
2. Nametkin, S. S., and E. S. Pokrovskaya, J. Gen. Chem. (U.S.S.R.) 7, 962 1937; C.A. 31, 5332 1937; Chem. Zentr. 1937, II, 1569.
3. Nametkin, S. S., and E. S. Pokrovskaya, J. Gen. Chem. (U.S.S.R.) 8, 699 1938; C.A. 33, 1298 1939.

15. BENZENE WITH ONE BICYCLENYLALKYNYL SUBSTITUTION, C_nH_{2n-16}

1-Phenyl-3-[4'-(7',7'-dimethylbicyclo-[3,1,1]-hepten-4'-yl)]-propyne-1



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}		Additional Data
	177.5–178.5	10[1]	0.9896[1]	1.56336[1]		$[\alpha]_D^{20}$ = +18.725°[1] (a)
	89-90	0[1]		1.55804	$n_{H\alpha}^{20}$ [1]	
				1.57735	$n_{H\beta}^{20}$ [1]	

(a) Angles of rotation for lines other than *D* are given in reference 1.

References on Benzene with One Bicyclenylalkynyl Substitution

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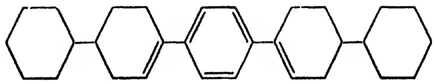
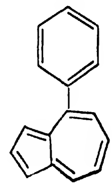
16. BENZENE WITH TWO CYCLYLCYCLENYL SUBSTITUTIONS, C_nH_{2n-18}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Di-(4′-cyclohexylcyclohexen-1′-yl)-benzene				
240–245 [1]	250 0.7 [1]			

References on Benzene with Two Cyclylcyclenyl Substitutions

1. von Braun, J. G. Irmisch, and J. Nelles, Ber. 66, 1471 1933.

17. BENZENE WITH ONE BICYCLOPENTAENYL SUBSTITUTION, C_nH_{2n-20}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2-Phenylbicyclo-[5,3,0]-decapentaene-2,4,6,8,10 (4-Phenylazulene) 				
210–211[1]				

References on Benzene with One Bicyclopentaenyl Substitution

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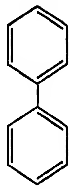
IV. BIPHENYL AND ITS ALIPHATIC DERIVATIVES

1. Biphenyl C_nH_{2n-14}
2. Biphenyl with Alkyl Substitutions C_nH_{2n-14}
3. Biphenyl with One Alkenyl Substitution C_nH_{2n-16}
4. Biphenyl with Two Alkenyl Substitutions C_nH_{2n-18}

Biphenyl
(Diphenyl)



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
70.0	**254.9**		**0.9712**	**100°**			Crit. Temp., °C.
71–72 [30,149]	255.9 [112]		1.041 [102]		1.614 [102]		495.6 [74,79]
71.0 [202]	255.27 [136]		0.5540	482.2° [136]	1.61589 [101]		374.5 [36]
71(a)	255.25 [40]		0.6104	454.4° [136]	1.58728_5	77.14° [195]	
70.5–71 [18,97]	255 [22,185]		0.6551	426.7° [136]	1.58822	77.1° [193]	Crit. Pressure, mm. Hg
70–71(b)	254.93 [89]		0.6934	398.9° [136]	1.56841	$n_{H\alpha}^{99.0}$ [153]	
70.8 [123]	254.9 [23]		0.7270	371.1° [136]	1.58112	$n_{H\alpha}^{77.1}$ [193]	
70.5(c)	254(f)		0.7578	343.3° [136]	1.58189	$n_{H\alpha}^{73}$ [54]	24,168.0 [79]
70–70.5 [59]	252 [190]		0.7856	315.6° [136]	1.59441	$n_{H\beta}^{99.0}$ [153]	
70.2 [55]	250–252 [214]		0.8127	287.8° [136]	1.60760	$n_{H\beta}^{77.1}$ [193]	
70.0–70.2 [81]	257.37	800 [89]	0.8382	260.0° [136]	1.60836	$n_{H\beta}^{73}$ [54]	
70.0 [138]	257.06	795 [89]	0.8425	255.3° [136]	1.61158	$n_{H\gamma}^{99.0}$ [153]	
70(d)	256.76	790 [89]	0.8620	232.2° [136]	1.62538	$n_{H\gamma}^{77.1}$ [193]	
69–70 [2,3,73,140,209,211]	256.45	785 [89]	0.8849	204.4° [136]		(j)	
69.85 [26]	256.15	780 [89]	0.9053	179.4° [48]			
69.8 [37,53]	255.85	775 [89]	0.9075	176.7° [136]			
69.6–69.7 [94]	255.54	770 [89]	0.9272	152.0° [27]			
69.6 [41]	255.24	765 [89]	0.9304	148.7° [136]			
69.5 [9,93,141,210]	254	762 [171,172]	0.9372	138.8° [92]			
69–69.5 [157]	253.8		0.9526	121.1° [136]			
68.5–69.5 [91]	–254.4	759 [127]	0.9593	118.0° [48]			
69.4 [68,213]	248–249	756.5 [91]	0.9611	109.66° [92]			
69.22 [136]	254.62	755 [89]	0.9626	108.6° [27]			
69.2 [40]	253.8	754.15 [171]	0.9649	105° [53]			
69.1 [86,90,137]	254	754 [23]	0.97165	99° [153]			
69.0 [89,113,114,115]	254.32	750 [89]	0.9748	93.3° [136]			
69(e)	254.01	745 [89]	0.9855	83.4° [48]			
68.5–69 [212]	253.71	740 [89]	0.9852	82.33° [26]			
68–69 [43,119]	253.40	735 [89]	0.9845	82.0° [27]			
68.95 [198]	253.10	730 [89]	0.9857	80.1° [92]			
68.90 [92]	252.79	725 [89]	0.9878	79.53° [26]			
68.9 [50]	252–253	721.9 [27]	0.9890.	77.14° [195]			
68.6 [152]	252.48	720 [89]	0.9896	77.1° [193]			
68.5 [66]	252.9	716 [16]	0.9902	77.02° [26]			
68.3 [179]	252.16	715 [89]	0.9915	75.03° [26]			
68 [110,178]	251.3		0.9893	75° [53]			
	–252.8	714.7 [42A]	0.9919	73.0° [92]			
	251.85	710 [89]	0.9919	73° [54]			
	251.53	705 [89]	0.9946	72.01° [26]			
	251.21	700 [89]	0.9970	70.52° [26]			

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
Biphenyl	250.57	690 [89]	0.9961	70.5° [165]		
(*Continued*)	249.92	680 [89]	1.0002	67.03° [26]		
	249.27	670 [89]	1.0032	62.61° [26]		
	248.61	660 [89]	1.0046	61.12° [26]		
	247.94	650 [89]	1.0031	60° [92]		
	247.26	640 [89]	1.0072	58.56° [26]		
	246.57	630 [89]	1.1453	30.53°		
	245.87	620 [89]		(solid) [26]		
	245.15	610 [89]	1.17466(g)	24.9° [82]		
	244.42	600 [89]	1.17470(g)	24.8° [82]		
	243.68	590 [89]	1.17507(g)	24.8° [82]		
	242.93	580 [89]	1.17455(g)	24.4° [82]		
	242.18	570 [89]	1.17544(g)	24.4° [82]		
	241.41	560 [89]	1.17560(g)	24.2° [82]		
	240.63	550 [89]	1.17520(g)	24.1° [82]		
	239.84	540 [89]	1.1545	19.05°		
	239.04	530 [89]		(solid) [26]		
	238.23	520 [89]	1.120(g)	17° [82]		
	237.41	510 [89]	1.1632	9.02°		
	236.58	500 [89]		(solid) [26]		
	235.74	490 [89]	1.180(g)	0° [215]		
	234.89	480 [89]	1.154(h)	(solid) [139]		
	234.02	470 [89]	1.165(i)(h)	(solid) [169]		
	233.14	460 [89]				
	230	458 [23]				
	232.22	450 [89]				
	231.28	440 [89]				
	230.33	430 [89]				
	229.36	420 [89]				
	228.38	410 [89]				
	227.39	400 [89]				
	226.38	390 [89]				
	225.36	380 [89]				
	224.32	370 [89]				
	223.26	360 [89]				
	222.19	350 [89]				
	221.09	340 [89]				
	220.00	330 [89]				
	218.90	320 [89]				
	217.79	310 [89]				
	216.65	300 [89]				
	215.50	290 [89]				
	214.34	280 [89]				
	213.18	270 [89]				
	212.01	260 [89]				
	210.80	250 [89]				
	188	200 [23]				
	145	22 [198]				
	127–128	14 [80]				
	130–132	10 [183]				

* $\frac{1}{T_b} = 0.0029665 - 0.0003724 \log_{10} p_{mm}$ (340 to 800 mm)

† $\frac{dD}{dt} = -0.0008170[1 + 0.0004558(t - 100)]/°C$ (58 to 233°C)

(a) The melting point 71 is found in references 42, 47, 51, 55, 80, 84, 88, 100, 118, 121, 122, 124, 125, 126, 131, 133, 143, 144, 145, 159, 162, 167, 170, 177, 190, 199, 207.
(b) The melting point 70-71 is found in references 8, 11, 24, 28, 33, 99, 106, 150, 180, 200.
(c) The melting point 70.5 is found in references 1, 6, 10, 15, 20, 21, 31, 35, 49, 55, 56, 60, 67, 70, 76, 101, 111, 117, 130, 132, 135, 155, 158, 163, 164, 165, 166, 168, 182, 186, 189, 191, 192, 193, 204, 208.
(d) The melting point 70 is found in references 7, 12, 13, 14, 17, 19, 25, 29, 32, 34, 36, 38, 39, 45, 57, 58, 61, 62, 64, 65, 69, 71, 72, 75, 77, 78, 83, 87, 95, 96, 103, 104, 105, 107, 109, 116, 120, 128, 129, 134, 146, 147, 148, 151, 154, 156, 161, 174, 175, 176, 178, 181, 184, 188, 205.
(e) The melting point 69 is found in references 44, 46, 98, 160, 187, 196, 201, 203.
(f) The boiling point 254 is found in references 4, 5, 17, 32, 63, 64, 80, 85, 100, 101, 108, 117, 130, 162, 163, 168, 191, 194, 197, 200, 206.
(g) These densities were apparently determined on the solid.
(h) The temperature of this density is not given.
(i) This density is the average of two determinations.
(j) Refractive indices at other lines may be found in references 92, 142, 153.

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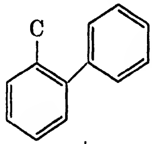
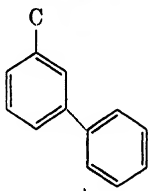
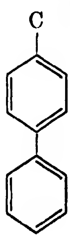
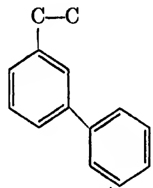
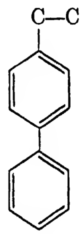
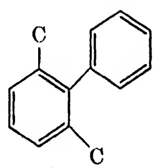
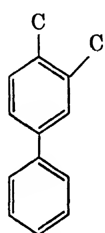
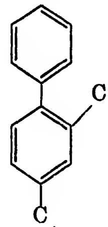
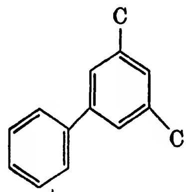
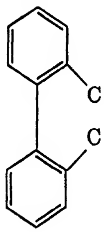
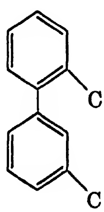
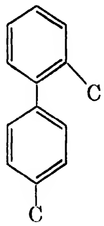
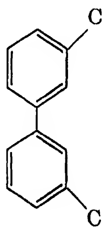
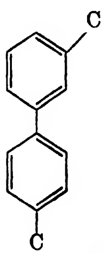
2. BIPHENYL WITH ALKYL SUBSTITUTIONS, C_nH_{2n-14}

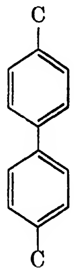
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-2-phenylbenzene 				
	260			
	261–264 [18,55,56]	1.010 [34]		
	261–263 [22,55]			
	260 [69]			
	255–258 [11,26,34,43]			
	130–136 27 [72]			
1-Methyl-3-phenylbenzene 				
	270			
	272–277 [1]	1.0121 [41]	1.6029 [78]	
	272–274 [78]	1.010 22° [72]	1.60355 [41]	
	270–272 [34]	1.012 17° [34]	1.5916 22° [72]	
	270 [57]	1.0182 16.7° [78]	1.60443 16.7° [78]	
	267–269 [11,26]	1.031 0° [1]	1.59747 $n_{H\alpha}^{16.7}$ [78]	
	269 748 [41]		1.62386 $n_{H\beta}^{16.7}$ [78]	
	148–150 20 [72]			
1-Methyl-4-phenylbenzene 				
48.5	**267**			
51 [61]	267–268 [26]			
50 [11]	263–268 [13]			
49–50 [37]	267 [69]			
48 [41]	263–267 [18,22]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-4-phenylbenzene (*Continued*)				
47–48 [21,23,81] 47.7 [26] 47.5 [72]	134–136 15 [72]			
$C_{14}H_{14}$				
1-Ethyl-3-phenylbenzene 				
	286–288 774 [1] 283–284 763 [1]	1.043 0° [1]		
1-Ethyl-4-phenylbenzene 				
46–47 [78]	140 15 [78]			
1,3-Dimethyl-2-phenylbenzene 				
	260–265 [33]			
1,2-Dimethyl-4-phenylbenzene 				
	284–287 [32] 281–283 [23,24]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2,4-dimethylbenzene 				
	264–267[27]			
1,3-Dimethyl-5-phenylbenzene 				
	273–276[32]			
2,2′-Dimethylbiphenyl 				
18[75] 17–18[47] 17.8[76] 17.0[4,20]	257–259[46] 258[7] 256–258[47] 258 737.6[76]			
2,3′-Dimethylbiphenyl 				
	273–276[46] 270[69A]	0.9984 22°[46]	1.5848 22°[46]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,4′-Dimethylbiphenyl 				
	283–288 [12] 273–276 [26]			
3,3′-Dimethylbiphenyl 				
5–7 [70]	287–288 [57] 286 [46] 280–284 [50] 283 [11] 283 718 [76] 287–288 716 [70] 286 716 [73] 286–287 713 [70] 154 14 [58] 138–139 5 [9]	0.9993 16° [73]		
3,4′-Dimethylbiphenyl 				
14–15 [41]	288–289 752 [41]	0.998 [41]	1.59713 [41]	

4,4′-Dimethylbiphenyl

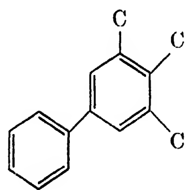


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
121.6				
125 [30,48]	296 [69]	0.9172 121° [67]	1.531 22° [65]	
122–123 [79]	295 [76]	0.9993 D_0^{20} [65]		
122 [76,77]	292–293 752 [41]	1.102 (solid) [48,49]		
121–122 [28,41,74]				
121(a)				
120.8–121 [67]				
120–121 [82]				
120 [62]				
119.5–120 [58]				
119–120 [25]				
118–119 [5]				

(a) The melting point 121 is found in references 6, 11, 12, 16, 19, 26, 54, 63, 65, 66, 69, 71, 83.

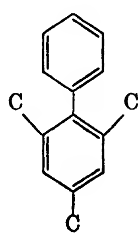
$C_{15}H_{16}$

1,2,3-Trimethyl-5-phenylbenzene

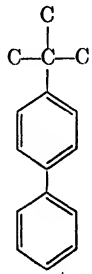
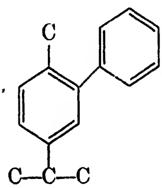
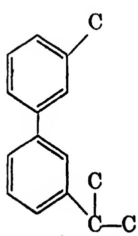


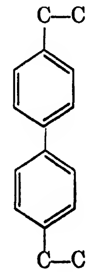
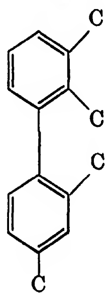
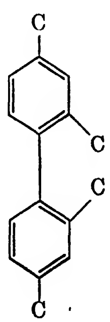
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	175–185 23 [32]			

1-Phenyl-2,4,6-trimethylbenzene

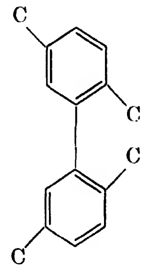


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	275–277 [31]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-*tert*-Butyl-4-phenylbenzene 				
51–52[29]				
1-Methyl-2-phenyl-4-isopropylbenzene 				
	268 752[35] 156–157 14[64] 153–154 14[35] 143 14[36] 148.5 –149.5 10[64]	0.9676[64] 0.9776 15°[36] 0.9822 13.8°[35]	1.56764[64] 1.56797 15°[36] 1.5670 13.8°[35] 1.56149 $n_{H\alpha}^{20}$[64] 1.56228 $n_{H\alpha}^{15}$[36] 1.58239 $n_{H\beta}^{20}$[64] 1.58266 $n_{H\beta}^{15}$[36] 1.59553 $n_{H\gamma}^{20}$[64] 1.59626 $n_{H\gamma}^{15}$[36]	
3-Methyl-3′-isopropylbiphenyl 				
	158 19.5[72]			

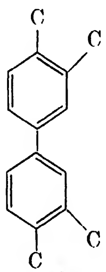
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4,4′-Diethylbiphenyl 				
80[68]				
2,2′,3,4′-Tetramethylbiphenyl 				
	162–163 12[42]			
2,2′,4,4′-Tetramethylbiphenyl 				
41[76]	288 722[76]			

2,2′,5,5′-Tetramethylbiphenyl



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
50 [76]	284 732 [76]			

3,3′,4,4′-Tetramethylbiphenyl



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
76–77 [17,60]				

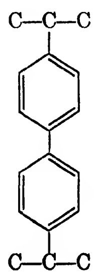
$C_{18}H_{22}$

Hexylphenylbenzene (a)

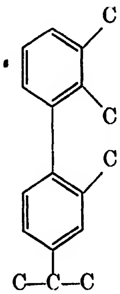
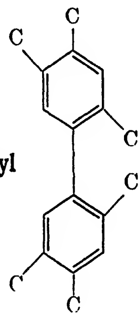
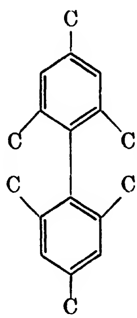
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
−36 [59]	149–151 4 [59]	0.9613 [59]	1.5640 [59]	
−40 [59]	141–143 2.5 [59]	0.9648 [59]	1.5641 [59]	
			1.5660 15° [59]	
			1.5665 15° [59]	

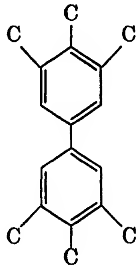
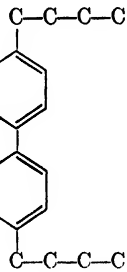
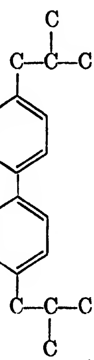
(a) The structure of this compounds is not given, but the author indicates that there are two isomeric forms.

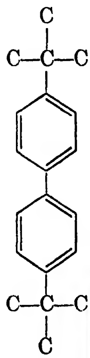
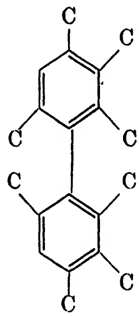
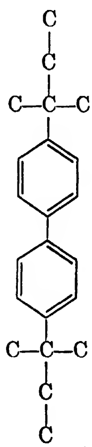
4,4′-Diisopropylbiphenyl



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
64–65 [8]	335 [8]			
49 [10,68]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2′,3-Trimethyl-4′-isopropylbiphenyl				
197[7]				
2,2′,4,4′,5,5′-Hexamethylbiphenyl				
52[76]	320 738[76]			
2,2′,4,4′,6,6′-Hexamethylbiphenyl				
100.2 100.5[50,76] 100–100.5[3,58] 100[45] 99.5–100[53]	296 735[76]	1.023 (solid)[40]		

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
3,3′,4,4′,5,5′-Hexamethylbiphenyl 				
132–133[44]				
$C_{20}H_{26}$				
4,4′-Di-*n*-butylbiphenyl 				
58–59[10]	228–230 14[10]	0.9499 15°[10]	1.5503 19°[10]	
4,4′-Di-*sec*-butylbiphenyl 				
	222–224 20[10]	0.9530 15°[10]	1.5577 16°[10]	

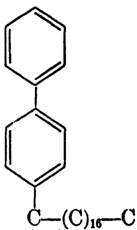
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4,4′-Di-*tert*-butylbiphenyl				
128–129 [14,15] 122 [68]	190–192 13 [14,15]			
2,2′,3,3′,4,4′,6,6′-Octamethylbiphenyl				
121–122 [38]				
$C_{22}H_{30}$				
4,4′-Di-*tert*-pentylbiphenyl				
	224 16 [10]			

M. P., °C	B. P., °C @ 760mm		D_4^{20}	n_D^{20}		Additional Data
Dihexylbiphenyl (a)						
−28 [59]	185–188	3.5 [59]	0.9343 [59]	1.5449 [59]		
−30 [59]	192–194	2.5 [59]	0.9349 [59]	1.5452 [59]		
	180–181	2.5 [59]	0.9353 [59]	1.5467	15° [59]	
				1.5470	15° [59]	
				1.5473	15° [59]	

(a) The structure of this compound is not given, but the author indicates that there are three isomeric forms.

$C_{30}H_{46}$

1-Phenyl-4-octadecylbenzene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
79.81 [52]	270–275	5 [52]	0.9138(a)	25° [51]	1.5031	80° [80]	
77.5–78 [51]							

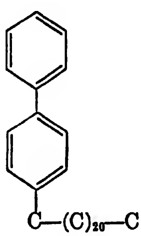
(a) This density is an extrapolated value.

M. P., °C	B. P., °C @ 760mm		D_4^{20}	n_D^{20}		Additional Data
Trihexylbiphenyl (a)						
−22 [59]	228–231	2.5 [59]	0.9140 [59]	1.5302 [59]		
−23 [59]	220–222	2.5 [59]	0.9154 [59]	1.5327 [59]		
	210–212	2 [59]	0.9167 [59]	1.5332 [59]		
				1.5330	15° [59]	

(a) The structure of this compound is not given but the author indicates that there are three isomeric forms.

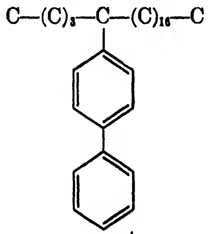
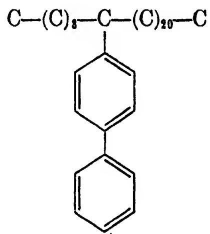
$C_{34}H_{54}$

1-Phenyl-4-docosylbenzene



M. P., °C	B. P., °C @ 760mm	D_4^{20}		n_D^{20}	Additional Data
82–84.5 [51]		0.9092(a)	25° [51]		

(a) This density is probably an extrapolated value.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
5-*p*-Biphenylyldocosane 				
41.5–43 [51,52]	200–201 2 [52]	0.899 25° [51]	1.5158 [51]	
$C_{38}H_{62}$ **5-*p*-Biphenylylhexacosane** 				
44–45 [51]		0.9269(a) 25° [51]		

(a) This density is an extrapolated value.

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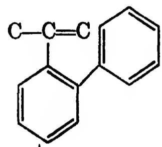
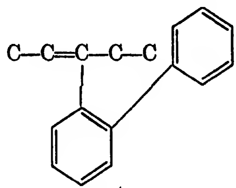
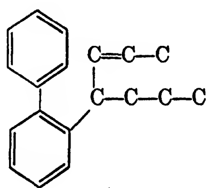
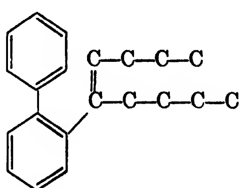
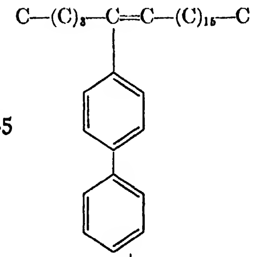
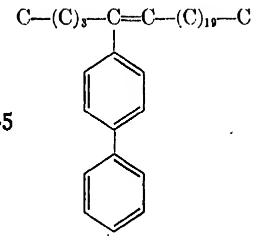
3. BIPHENYL WITH ONE ALKENYL SUBSTITUTION, C_nH_{2n-16}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Isopropenyl-2-phenylbenzene 				
	125–128 7[1]			
$C_{17}H_{18}$				
3-*o*-Biphenylylpentene-2 				
	138–141 7[1]			
$C_{19}H_{22}$				
4-*o*-Biphenylylheptene-2 				
	155–157 8[1]			
$C_{21}H_{26}$				
5-*o*-Biphenylylnonene-4 				
	178–179 7[1]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
5-*p*-Biphenylyldocosene-5 				
37-38 [2]		0.9120(a) 25° [2]	1.5306 25° [2]	
(a) This density is an extrapolated value.				
$C_{38}H_{60}$				
5-*p*-Biphenylylhexacosene-5 				
37-39 [2]		0.9052(a) 25° [2]	1.5252 25° [2]	
(a) This density is an extrapolated value.				

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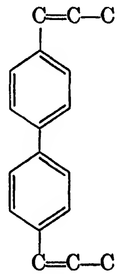
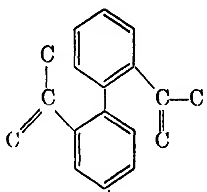
4. BIPHENYL WITH TWO ALKENYL SUBSTITUTIONS, C_nH_{2n-18}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4,4′-Di-(propen-1″-yl)-biphenyl 				
186 [2]				
2,2′-Diisopropenylbiphenyl 				
97–98 [1]				

References on Biphenyl with Two Alkenyl Substitutions

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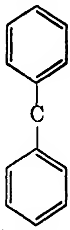
V. TWO PHENYL SUBSTITUTIONS ON ALIPHATICS

Diphenylmethane



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
25.9	263.2		1.0059				Crit. Temp., (°C)
28 [66]	264–266 [82]		1.0060 [95]		1.57683 [95]		555.8 [63]
27–28 [5]	265.6 [54]		1.006 [47]		1.5770 [36]		529.0 [100]
27.04 [8]	265 [6]		1.008 [25]		1.577 [47]		497.0 [33,34,72]
27(a)	264–265 [74]		1.0152	210.0° [23]	1.5772 [79]		Crit. Pressure, (mm Hg)
26–27 [14,84,95,110]	264.7 [71]		1.0879	153.0° [23]	1.5709	28.4° [105]	21,432.0 [34]
26.5 [80]	264 [106]		0.9181	131.1° [26]	1.5649	25° [91]	
26–26.5 [98,112]	262–264 [40]		1.1264	107.9° [23]	1.5697	25° [59]	
26.4 [2,41]	263 [88,108]		0.9443	100° [49]	1.57390	25° [7]	
26.3 [15,27]	262–263 [80,84]		0.94402	99° [71]	1.5745	25° [73]	
26.1 [64,93]	262 [11,75,76,100]		0.9844	D_{95}^{95} [71]	1.5782	25° [67]	
26(b)	261–262(c)		0.9851	D_{90}^{90} [71]	1.57884	16.8° [2]	
25–26 [6,81,83,87,107]	260–262 [18,32,51]		0.9860	D_{85}^{85} [71]	1.56957	16° [44]	
25.64 [62]	261.5 [50]		0.9870	D_{80}^{80} [71]	1.51975	$n_{H\alpha}^{131.1}$ [26]	
25.6 [27]	261 [24,59,67,77,104]		1.1519	75.9° [23]	1.53474	$n_{H\alpha}^{99.0}$ [71]	
25.5 [13,61,96]	260–261 [44,97,107]		0.9626	75.7° [26]	1.54655	$n_{H\alpha}^{75.7}$ [26]	
25–25.5 [36]	259–261 [87]		0.9881	D_{75}^{75} [71]	1.56954	$n_{H\alpha}^{26}$ [26]	
25.2 [38,69]	260 [20,29,43]		0.9893	D_{70}^{70} [71]	1.57145	$n_{H\alpha}^{20.0}$ [95]	
25.09 ± 0.01 [19]	258–260 [92]		0.9906	D_{65}^{65} [71]	1.57304	$n_{H\alpha}^{16.8}$ [2]	
25 [30,31]	259 [57,58]		0.9919	D_{60}^{60} [71]	1.57653	$n_{H\alpha}^{11}$ [26]	
24–25 [68,102,111]	258–259 [91]		0.9746	59.0° [63]	1.53839	$n_{H\beta}^{131.1}$ [26]	
24.8 [35,42]	262.3	766 [2]	0.9934	D_{55}^{55} [71]	1.55390	$n_{H\beta}^{99.0}$ [71]	
24.68 [70]	261.0–261.8	745 [60]	1.1724	54.3° [23]	1.56616	$n_{H\beta}^{75.7}$ [26]	
24.5 [8,86]	250.0	551.5 [17]	0.9950	D_{50}^{50} [71]	1.59002	$n_{H\beta}^{26}$ [26]	
24–24.5 [92]	217.0	240.1 [17]	0.9967	D_{45}^{45} [71]	1.59183	$n_{H\beta}^{20.0}$ [95]	
24.45 [70]	175.4–175.5	72 [53]	1.1806	43.59° [8]	1.59390	$n_{H\beta}^{16.8}$ [2]	
24.0 [46]	158	35 [44]	0.9987	D_{40}^{40} [71]	1.59730	$n_{H\beta}^{11}$ [26]	
24 [28,90,94]	141	27 [44]	1.1851	39.24° [8]	1.56615	$n_{H\gamma}^{99.0}$ [71]	
	138–143	24 [10]	1.1876	37.43° [8]	1.60483	$n_{H\gamma}^{20.0}$ [95]	
	134	21 [105]	1.1893	35.20° [8]	1.61731	$n_{H\gamma}^{16.8}$ [2]	
	133–135	16 [95]	1.0009	D_{35}^{35} [71]	(e)		
	142–144	15 [84]	1.0032	D_{30}^{30} [71]			
	128–131	12 [10]					
	128–129	11 [65]					
	125–128	10 [85]					
	117–118	9 [42]					
	90–91	4 [38]					

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
Diphenylmethane (*Continued*)	99–102	1[28]	1.1962	29.27°[8]		*
			1.1983	27.15°[8]		
			1.0008	26°[26]		
			1.2016	25.01°[8]		
			1.0000	25°[67]		
			1.0024	25°[73]		
			1.0043	25°[69]		
			1.0056	D_{25}^{25} [71]		
			1.2037	23.20°[8]		
			1.2058	21.07°[8]		
			1.006	D_{20}^{20} [55]		
			1.2076	19.41°[8]		
			1.3333	17.79° (solid)[8]		
			1.00790	16.8°[2]		
			1.0126	11°[26]		
			1.3421	10.18° (solid)[8]		
			(d)			

$* \frac{dD}{dt} = -0.0007539[1+0.0009326(t-20)]/°C$ (10 to 131°C)

(a) The melting point 27 is found in references 1, 4, 9, 11, 22, 27, 37, 74, 75, 76, 77, 78, 106.
(b) The melting point 26 is found in references 10, 12, 14, 21, 24, 39, 45, 48, 49, 52, 56, 57, 58, 82, 88, 89, 99, 103, 104.
(c) The boiling point 261-262 is found in references 5, 7, 16, 22, 101, 110, 111.
(d) The densities on this compound fall into two distinct and widely separated ranges. The bold face value is calculated on the lower range since it contains more data.
(e) Refractive indices at other lines may be found in reference 71.

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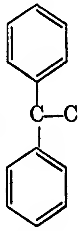
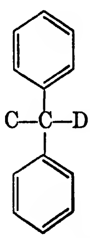
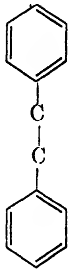
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,1-Diphenylethane 							
	268.8						
	270–272[134,135]		0.9875[170]		1.5761[168]		
	268–271[60]		0.9997[148]		1.5702	25°[149]	
	268–270[73,80,123]		1.001[174]		1.573	21°[134,135]	
	268–269[6,170]		1.0039[64]		1.5755	14°[80]	
	267–269[149]		0.9877	25°[79]	1.56837	$n_{H\alpha}^{20}$[174]	
	148	22[79]	0.9998	25°[64]	1.58776	$n_{H\beta}^{20}$[174]	
	148–153	20[58]	1.006	21°[135]	1.57380	n_{He}^{20}[174]	
	150	20[174]	1.006	D_0^{21}[134]			
	150	16[5,7]	1.006	14°[80]			
	148	15[148]					
	147	15[1]					
	143–144	15[142]					
	143	15[16]					
	145	13[7]					
	137–138	12.5[20]					
	136	12.5[145]					
	136	12[80,164]					
	131–132	11[98]					
	130–133	10[169]					
	128–129	8[2]					
Methyldiphenylmethane-d 							
	136–137	12[20]					

1,2-Diphenylethane
(Dibenzyl)



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
52.0	**284.7**		**0.9661**	**50°**			Crit. Temp., (°C)
53.6 [61]	286.3 [82]		0.8438	210.2° [41]	1.5704	25° [128]	492 [161]
53.4 [99]	285 [54]		0.867	178° [86]	1.53385	$n_{H\alpha}^{80.6}$ [47]	
52.5–53.2 [162]	284–285 [71]		0.8828	158.8° [41]	1.55257	$n_{H\beta}^{80.6}$ [47]	
53.0 [46,75]	284.9 [88]		0.891	147° [86]			
53(a)	284(e)		0.913	120° [86]			
52.5–53 [1,28,143]	283–284 [69]		0.9212	107.8° [41]			
52–53 [3,66,169]	283 [87]		0.9283	100° [46]			
52.5 [90,91,120,134,137,155]	281–282 [121]		0.939	85° [86]			
52–52.5 [6]	281–282	758 [33]	0.9416	80.6° [47]			
51.5–52.5 [27,34]	276–278	756 [104]	0.9454	75.7° [41]			
52.3 [140]	240.1	250 [82]	0.9713	D_{75}^{75} [121]			
52.21 [15]	205.7	100 [82]	0.9725	D_{70}^{70} [121]			
52.0 [11,29]	170	17 [7]	1.0254	68.83° [15]			
52(b)	150–155	17 [37]	1.0283	65.63° [15]			
51.5–52 [30,56,96,97]	150–155	11 [124]	0.9738	D_{65}^{65} [121]			
51–52(c)	158	10 [126]	1.0319	62.32° [15]			
51.8 [19,163]	135	10 [145]	1.0324	60.71° [15]			
51.65 [56]			0.9581	60° [46]			
51.5 [4,7,156]			0.9752	D_{60}^{60} [121]			
51.4 [119,121]			1.0342	58.63° [15]			
51.3 [10,48,56,87]			0.958	58° [86]			
51.25 [89]			1.0371	55.23° [15]			
51.2 [48]			0.9766	D_{55}^{55} [121]			
51.0 [70]			1.0140	$D_{13}^{53.0}$ [11]			
51(d)			1.0423	52.3° [140]			
50–51 [3,53,146]			1.0401	52.21° [15]			
50.8 [94]			1.0421	50.12° [15]			
50.5 [9,43]			0.9655	50° [46]			
50 [59,92,145,151,165]			0.9782	D_{50}^{50} [121]			
			1.0452	46.79° [15]			
			1.1011 ±0.0015	46° [130]			
			1.0495	42.61° [15]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^0	Additional Data
1,2-Diphenylethane *(Continued)*		0.9876 25° [128]		*
		1.1772 16.00° (solid) [15]		
		1.1811 12.21° (solid) [15]		
		1.1865 3.85° (solid) [15]		
		1.0027 0° [46]		
		1.104 0° [175]		
		1.100(f) [12]		
		1.105(f) [65,129]		
		1.110(f) (solid) [105] (g)		

$* \frac{dD}{dt} = -0.0007643[1+0.00001317(t-50)]/°C$ (0 to 210°C)

(a) The melting point 53 is found in references 22, 25, 35, 110, 131, 157, 158, 171.
(b) The melting point 52 is found in references 7, 8, 13, 14, 17, 21, 23, 24, 26, 31, 32, 33, 40, 42, 45, 49, 50, 52, 54, 57, 63, 67, 68, 69, 72, 76, 77, 78, 81, 85, 86, 93, 95, 101, 102, 103, 109, 111, 113, 116, 118, 122, 124, 125, 127, 129, 133, 138, 139, 147, 150, 152, 153, 154, 159, 160, 166, 167, 172.
(c) The melting point 51-52 is found in references 38, 44, 83, 100, 107, 112, 141.
(d) The melting point 51 is found in references 7, 18, 36, 39, 51, 55, 106, 108, 114, 115, 117, 126, 132, 134, 135.
(e) The boiling point 284 is found in references 7, 27, 74, 84, 103, 134, 135, 136, 137, 144, 157, 158, 161, 173.
(f) The temperature for this density is not given.
(g) The densities on this compound fall into two distinct and widely separated ranges. The bold face value is calculated on the lower range since it contains more data.

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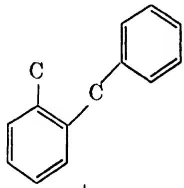
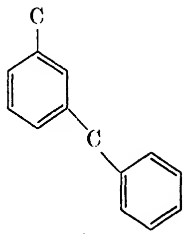
1-Methyl-2-benzylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	275–280 [38]						
	279–282 [76]						
	148–158	16 [76]					

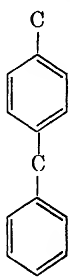
1-Methyl-3-benzylbenzene



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	274–276 [51]		0.997	17.5° [106]			
	275	747 [106]					
	268–269.5	725 [1]					
	120(a)	0.2 [135]					
	128(a)	0.11 [135]					

(a) These boiling points represent two different preparations.

1-Methyl-4-benzylbenzene



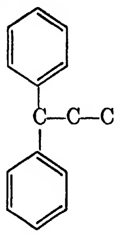
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	278.7						
	279–280 [57,63,136]		0.9976 [44]		1.5712 [44]		
	278–280 [6,130]		0.9978	19.3° [127]	1.57103	19.3° [127]	
	279 [80]		0.994	18° [57]	1.56579	$n_{H\alpha}^{19.3}$ [127]	
	278 [95,99]		0.995	17.5° [143, 144]	1.58571	$n_{H\beta}^{19.3}$ [127]	
	277 [144]				1.59804	$n_{H\gamma}^{19.3}$ [127]	
	279–280	761.5 [143]	0.9976	15.0° [42]			

1-Methyl-4-benzylbenzene (*Continued*)

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	271–272	750.2[42]					
	153–154	16[82]					
	144	16[127]					
	159.5	15[42]					
	145.5–145.7	13.5[147]					
	114–115	3[44]					
	110	1[32]					

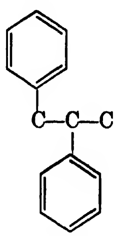
$C_{15}H_{16}$

1,1-Diphenylpropane

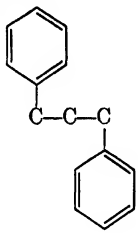
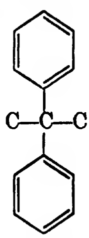


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	278.5–280.5[95,96]		0.990[142]		1.569	24°[95,96]	
	280[142]		0.9998[43]		1.5681	18.5°[59]	
	278–279	759[139]	0.9962	25°[43]	1.56810	14.1°[142]	
	278.5–280.5	754[59]	0.9881	D_0^{24} [95,96]	1.5657	14°[58]	
	153–154	20[56]	0.9938	18.5°[59]			
	149–151	18[12]	0.9951	14.1°[142]			
	140–141	13[142]	0.9919	14°[58]			
	140–142	11[79]					
	139	11[58]					
	142	10[77]					
	139	10[115]					
	129–131	7[49]					

1,2-Diphenylpropane

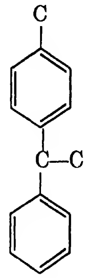


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
52[68]	280–282[95,96]		0.9807[139]		1.5700[112]		
50[129]	277–280[141]		0.9812[141]		1.5591	23.5°[59]	
	280–281	758[59]	0.9809	23.5°[59]	1.555	23°[95,96]	

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,2-Diphenylpropane (*Continued*)							
	278	751 [139]	0.9824	23° [56]			
	277–280	745 [50]	0.9953	0° [141]			
	166–167	28 [56]					
	155–157	22 [101]					
	145–148	13 [129]					
	147	10 [112]					
	109	2 [18]					
1,3-Diphenylpropane 							
	300.3						
6 [95]	301–303 [120]		1.007 [131]		1.5760 [59]		
	302 [95]		0.9930	25° [93]	1.5782 [93]		
	299–301 [8]		1.007	D_{20}^{20} [52]	1.5745	18° [52]	
	300 [81,98,99]				1.5712	17.5° [140]	
	299–300 [34]		1.0071	D_0^{20} [59]	1.5634	15° [111]	
	298–300 [111]		0.9982	17.5° [140]			
	297–300 [52]		0.9855	D_{15}^{15} [111]			
	298–299	758 [59]					
	163–167	21 [121]					
	166–168	16 [120]					
	155–157	12 [118]					
	124	2 [75]					
2,2-Diphenylpropane 							
29 [95,96]	282–283 [95,96]		0.9958	D_0^{25} [95,96]	1.570	25° [95,96]	
	282 [110]						
	281 [39,109]						

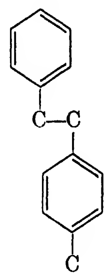
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

1-Phenyl-1-*p*-tolylethane



	154		0.9847	17.2°[126]	1.5646[126]		
	-155.8	14[126]	0.9849	16.9°[126]	1.56590[126]		
	143-144	11[78]			1.56038	$n_{H\alpha}^{17.2}$ [126]	
					1.57962	$n_{H\beta}^{17.2}$ [126]	
					1.59192	$n_{H\gamma}^{17.2}$ [126]	

1-Phenyl-2-*p*-tolylethane



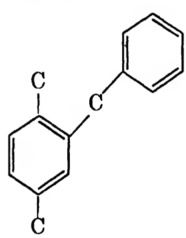
27[74]	286[74]						

Benzylethylbenzene (a)

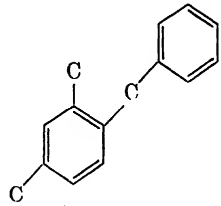
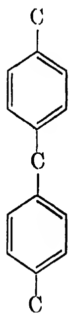
	294-295	754[132]	0.985	18.9°[132]			

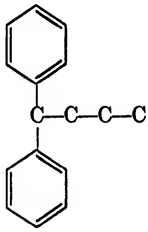
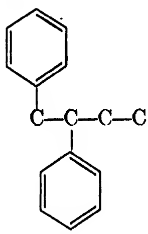
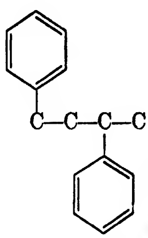
(a) The structure of this compound is not given.

1,4-Dimethyl-2-benzylbenzene

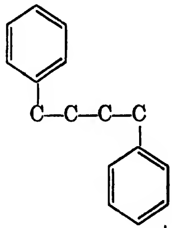


	294-295[107]		0.9950[107]				
	293.5						
	-294.5[145]						

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,5-Dimethyl-2-benzylbenzene 				
	295–296 [146]			
Benzyl-1,2-dimethylbenzene (a)				
33–34 [107]	295–298 [107]			
(a) The position of the benzyl substitution is not given.				
Benzyl-1,3-dimethylbenzene (a)				
	293–298 [107]	0.9951 [107]		
(a) The position of the benzyl substitution is not given.				
Di-*p*-tolylmethane 				
28–29 [114] 28.5 [92] 28 [64]	301.5 773 [114] 302 768 [114] 165 12 [92]			
Ditolylmethane (a)				
	289–291 [85] 290 [35,134] 289 [65] 163–165 20 [108]	0.9800 [43] 0.9777 25° [43]		
(a) The structure of this compound is not given.				

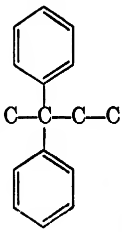
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenylbutane				
	286–288 [95,97]	0.9758 [103]	1.5577 [103]	
	265–266 751 [58]	1.006 [58]	1.554 16° [95,97]	
	178–179 20 [116]	0.9748 D_0^{16} [95,97]	1.577 16° [58]	
	161–163 20 [12]			
	170–175 15 [45]			
	160–162 12 [117]			
	148–152 12 [58]			
	140–142 11 [58]			
	150 10 [77]			
	103–104 0.05 [103]			
1,2-Diphenylbutane				
	285–287 [95,97]	1.0092 D_0^{18} [95,97]	1.587 18° [95,97]	
	288–289 751 [58]			
	161 19 [11]			
	152 11 [58]			
	149–151 10 [115]			
1,3-Diphenylbutane				
	295 [119]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,4-Diphenylbutane 

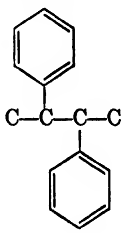
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
52				
52–53 [30]	317 [95,97,98,100,138]	0.9719 25° [93]	1.5493 25° [93]	
52(a)	315–317 [52]			
51–52 [137]				

(a) The melting point 52 is found in references 7, 25, 29, 33, 46, 47, 48, 52, 53, 54, 62, 73, 95, 97, 98, 100, 124, 128, 138.

2,2-Diphenylbutane 

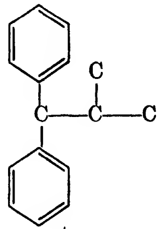
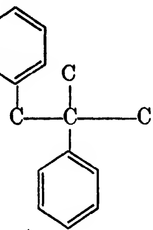
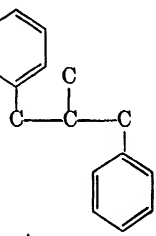
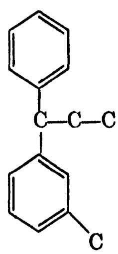
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
127.5–128.5 [122]	152 10(a) [2]			

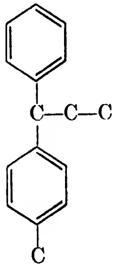
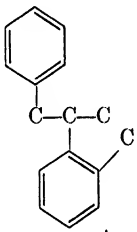
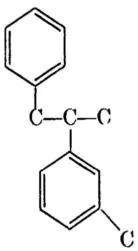
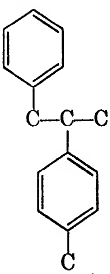
(a) This boiling point may be for 1,1-Diphenylbutane.

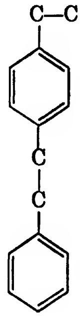
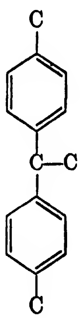
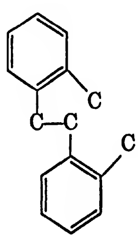
2,3-Diphenylbutane 

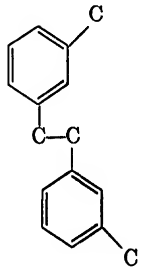
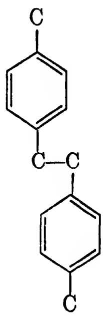
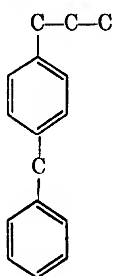
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
124.4				
126–127(a) [26,67]	283–284 752(b) [67]	0.9756(b) [67]	1.55516(b) [67]	
126(a) [9,66,67]	162–164 25(b) [69]	0.9755 20.7° [125]	1.5594 [26]	
124–125 [23,26,88]	150–151 20 [26]	0.9906(b) 0° [67]	1.54964 $n_{H_\alpha}^{20.7}$ [125]	
124 [15,55]	140 10(b) [67]	0.9917 D_0^0 [26]	1.56734 $n_{H_\beta}^{20.7}$ [125]	
123.5–124 [40]	103 1(b) [87]		1.57841 $n_{H_\gamma}^{20.7}$ [125]	
123–124 [61,69]			1.55479 $n_{H_\epsilon}^{20.7}$ [125]	
123.5 [27,28,83,104,105]				
8(b) [66,67]				

(a) This constant was determined on the *meso* inactive form of the compound.
(b) This constant was determined on the *dl* form of the compound.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Data Additional
1,1-Diphenyl-2-methylpropane 				
128[2]	285–286[95,97] 157 18[102] 145 13[2]	0.9780 D_0^{18}[95,97]	1.560 16°[95,97]	
1,2-Diphenyl-2-methylpropane 				
	284–287 750[13]	0.984 15°[13]		
1,3-Diphenyl-2-methylpropane 				
	297–298[95] 290–294[123]			
1-Phenyl-1-*m*-tolylpropane 				
	143–144 17[94]		1.5650 16°[94]	

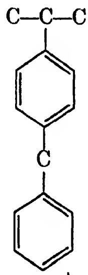
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-1-*p*-tolylpropane 				
	154–156 23[94]		1.5683[94]	
1-Phenyl-2-*o*-tolylpropane 				
	316–317[60,133]			
1-Phenyl-2-*m*-tolylpropane 				
	311–312[60,133] 240 110[60]	0.987 15°[60]		
1-Phenyl-2-*p*-tolylpropane 				
	302–303[60,133]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Ethyl-4-phenethylbenzene 				
	293–295 [113]			
1-Phenyl-1-ethylphenylethane (a)				
124 [89]				
(a) The position of the ethyl group is not given.				
1,1-Di-*p*-tolylethane 				
	293–295 723 [41] 155–157 12 [3] 144–145 8 [90]			
1,2-Di-*o*-tolylethane 				
66.5 [19,20,84] 65.5–66 [22] 65 [91]	177–178 20 [19,20]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Di-*m*-tolylethane 				
	298 [4] 296 [84] 294–296 [36] 163 10 [19,20,24]	0.9623 42° [24] 0.9661 32° [24] 0.9703 22° [24] 0.9756 12° [24] 0.9796 5° [24]	1.5556 22° [24]	
1,2-Di-*p*-tolylethane 				
82 82–83 [19,20,21] 82 [10,16,17,84,92] 81–82 [4] 81–81.5 [22] 81 [5]	296–298 730 [31] 178 18 [19,20]			
1-*n*-Propyl-4-benzylbenzene 				
	152–155 10 [37]	0.9737 18° [37]	1.5552(a) [37]	

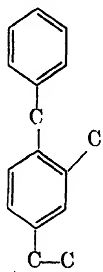
(a) It is not clear whether this refractive index is at 18° or 20°.

1-Isopropyl-4-benzylbenzene



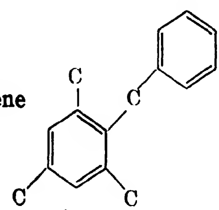
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	310[57] 176 13[57]	1.007 18°[57]		

1-Benzyl-2-methyl-4-ethylbenzene

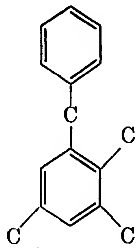


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	298–300[72]	1.0141 11°[72]		

1,3,5-Trimethyl-2-benzylbenzene



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
36[14,57]	300–303[57,70,71] 291–294 755[86] 183 11[57]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Benzyl-2,3,5-trimethylbenzene 				
	308–312[67] 190–191 20[67]	1.0151 18°[67]		

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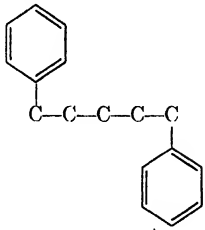
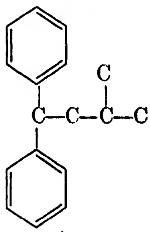
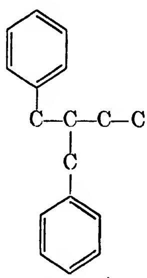
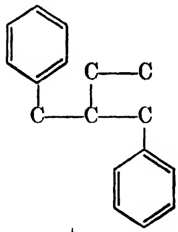
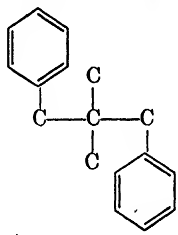
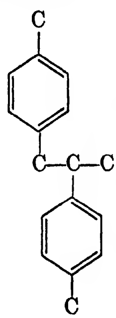
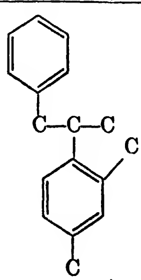
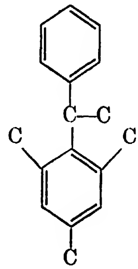
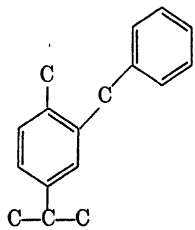
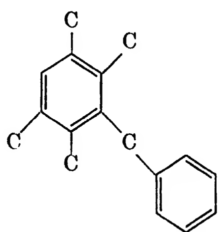
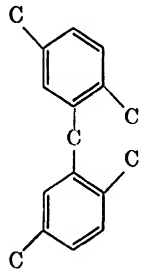
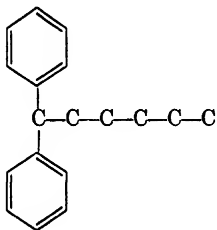
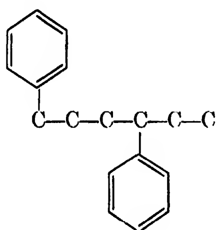
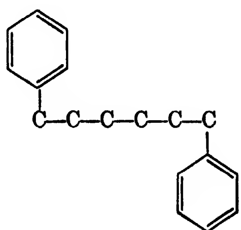
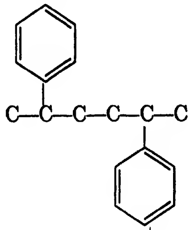
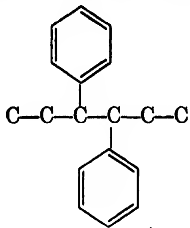
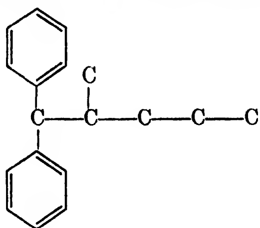
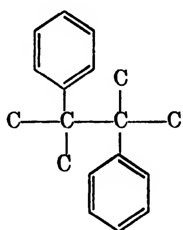
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,5-Diphenylpentane 				
	324 [58,59]	0.9601 25° [54]	1.5582 [31]	
	323–324 [31]	0.9788 D_{20}^{20} [31]	1.5457 25° [54]	
	326–327 747 [15]	0.9814 D_0^{19} [58,59]	1.559 19° [58,59]	
	185 20 [67]	0.985 13° [72]		
	187–189 10 [11]	0.9924 D_0^0 [58,59]		
1,1-Diphenyl-3-methylbutane 				
	297 [58,59]	0.9641 D_0^{21} [58,59]	1.551 21° [58,59]	
		0.9756 D_0^0 [59]		
1-Phenyl-2-benzylbutane 				
	166 16 [42]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3-Diphenyl-2-ethylpropane 				
	304–305[58]	0.9736 D_0^{21} [58] 0.9855 D_0^{0} [58]	1.553 21°[58]	
1,3-Diphenyl-2,2-dimethylpropane 				
68–69[68]	293–294[68]			
1,2-Di-*p*-tolylpropane 				
	142–144 5[29]	0.9726[29]	1.5565[29]	
1-Phenyl-2-(2′,4′-dimethylphenyl)-propane 				
	324[36]			

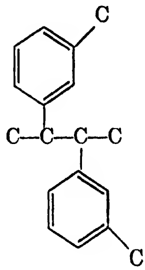
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-1-(2′,4′,6′-trimethylphenyl)-ethane 				
38–39 [23]				
1-Methyl-2-benzyl-4-isopropylbenzene 				
	296–297 [46]	0.9628 [56]	1.55638 [56]	
	296–297 743 [32]	0.9690 15° [32]	1.55650 15° [32]	
	176–177 17 [32]	0.98701 0° [46]	1.55138 $n^{15}_{H\alpha}$ [32]	
	165–167 12 [56]		1.56958 $n^{15}_{H\beta}$ [32]	
			1.58098 $n^{15}_{H\gamma}$ [32]	
1-Methylbenzyl-4-isopropylbenzene (a)				
	307–310 [64]	0.9916 [64]		
(a) The position of the benzyl substitution is not given.				
1,2,4,5-Tetramethyl-3-benzylbenzene 				
145 [4]	325–327 [4]			

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Di-2,5-dimethylphenylmethane 				
60–60.5[30]	313–316[30]			
$C_{18}H_{22}$				
1,1-Diphenylhexane 				
	164 10[45]			
1,4-Diphenylhexane 				
89[12]	147–149 3–4[26] 147–148 3[26]	0.9608 D_{20}^{20}[26] 0.9660 D_{20}^{20}[26]	1.5456[26] 1.5460[26]	
1,6-Diphenylhexane 				
137[38] 29[62]	206–208 20[71] 140 0.05[68]	0.9528 25°[54]	1.5380 25°[54]	

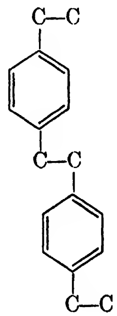
Compound	M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,5-Diphenylhexane 		185 12[19]	0.9634 15°[19]	1.5440 15°[19]	
3,4-Diphenylhexane 	92–93[66] 92[34] 89.5–90.5[27] 90[41] 88[48]	304–306 767[41] 297–298 767(a)[41] 175 20[34]	0.9591(a)[41] 0.9742(a) 0°[41]	1.54622(a)[41]	
1,1-Diphenyl-2-methylpentane 		160–161 14[5] 163–164 13[6]			
2,3-Dimethyl-2,3-diphenylbutane 	55–56[73]	138–140 15[73] 162–165 14[48]			

(a) This compound is the *dl* modification and exists in liquid state at room temperature.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

2,3-Di-*m*-tolylbutane


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
97 [69]				

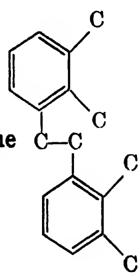
1,2-Di-(4′-ethylphenyl)-ethane


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
69.8–70.2 [16]				

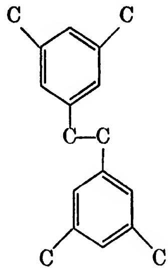
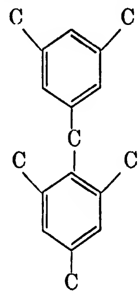
1,1-Di-*m*-Xylylethane (a)

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	323–325 [3]			

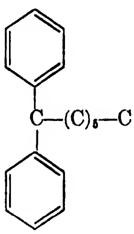
(a) The position of the methyl groups relative to the substitution of the phenyl group on the ethane is not given.

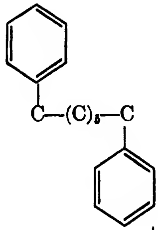
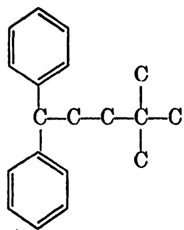
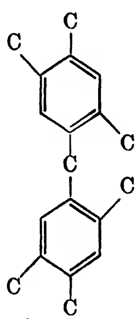
1,2-Di-(2′,3′-dimethylphenyl)-ethane


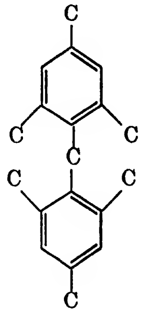
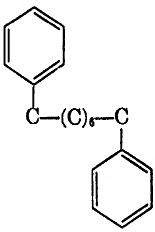
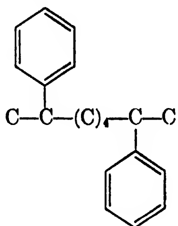
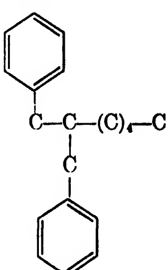
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
111–112 [52]				

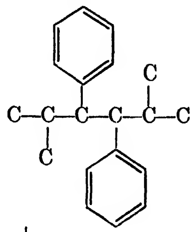
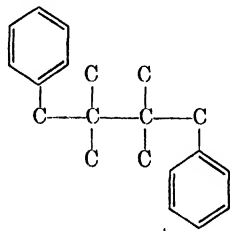
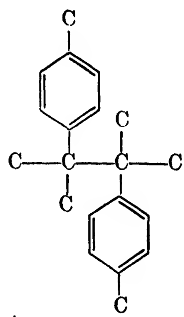
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Di-(3′,5′-dimethylphenyl)-ethane				
86–86.6 [16] 78 [13,14] 77–78 [48,76]	332 -332.5 763 [76] 210 15 [13,14]			
3,5-Dimethylphenyl-2′,4′,6′-trimethylphenylmethane				
67–68 [73,74,75]	328.5 -329 763 [76]			

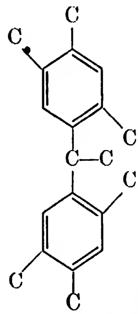
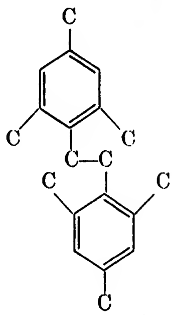
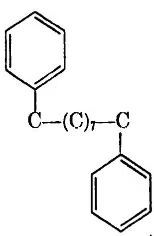
$C_{19}H_{24}$

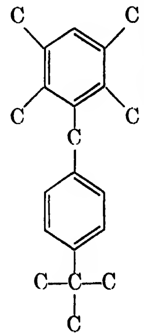
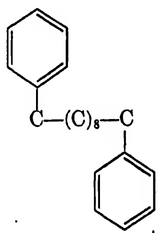
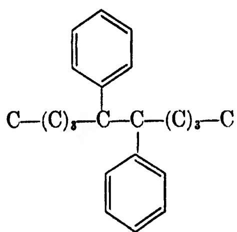
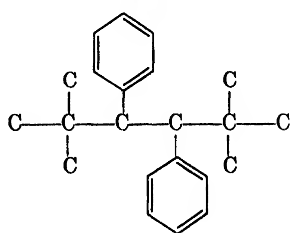
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenylheptane				
14 [3,33,37]	333–334 751 [33] 193 15 [37] 190–192 13 [3,33] 186 10 [37] 180 10 [33]			

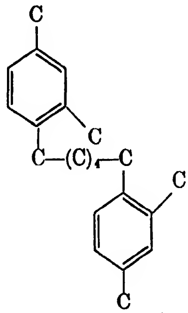
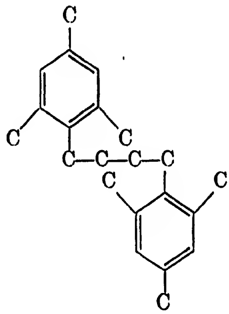
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,7-Diphenylheptane 				
	207–208 12[11]			
1,1-Diphenyl-4,4-dimethylpentane 				
	122–127 1[1] 114–116 0.65 to 0.70[1]	0.9520[1] 0.9522[1]	1.5411[1] 1.5418[1]	
2,2-Dixylylpropane (a)				
174.5[25]				
(a) The structure of this compound is not given.				
Di-2,4,5-trimethylphenylmethane 				
100[80] 99[79]	189–190 12[79]			

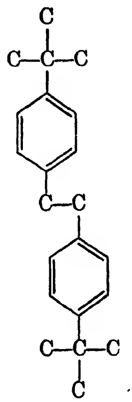
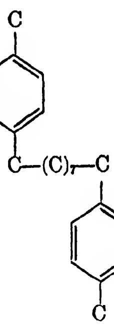
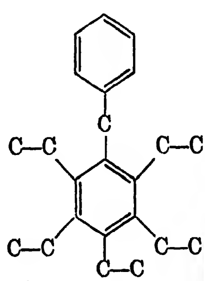
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Di-2,4,6-trimethylphenylmethane 				
135 [35,78] 130 [50,70]				
$C_{20}H_{26}$				
1,8-Diphenyloctane 				
10 [38]	215 12 [11] 208–210 8 [71]	0.9364 25° [54]	1.5298 25° [54]	
2,7-Diphenyloctane 				
	190–191 11 [57]			
1-Phenyl-2-benzylheptane 				
	135–136 [28] 7	0.9060 D_{20}^{20} [28]	1.48596 [28]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,5-Dimethyl-3,4-diphenylhexane 				
150–150.5 [17]				
1,4-Diphenyl-2,2,3,3-tetramethylbutane 				
131–132 [17]				
2,3-Dimethyl-2,3-di-*p*-tolylbutane 				
157 [7,8]				
1,1-Di-*n*-propyldiphenylethane (a)				
	192–194 42(b) [53] 244–248 37(b) [53]			
(a) The position of the propyl groups is not given. (b) These boiling points represent two different isomers.				
1,2-Di-*n*-propyldiphenylethane (a)				
97–98(b) [40]	178–179 13(c) [40]	0.9452(c) [40] 0.9596(c) 0° [40]	1.53663(c) [40]	
(a) The position of the propyl groups is not given. (b) This constant was determined on the *meso* form. (c) This constant was determined on the *dl* form.				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diisopropyldiphenylethane (a)				
	240–245 15[53]			
(a) The position of the isopropyl groups is not given.				
1,1-Di-(2′,4′,5′-trimethylphenyl)-ethane 				
126–127[79]				
1,2-Di-(2′,4′,6′-trimethylphenyl)-ethane 				
117–118[78]	344–348[51]			
$C_{21}H_{28}$				
1,9-Diphenylnonane 				
	235 12[11]			

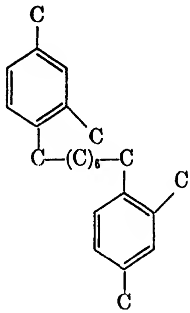
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,3,5,6-Tetramethylphenyl-4′-*tert*-butylphenylmethane 				
116–117[24]				
$C_{22}H_{30}$				
1,10-Diphenyldecane 				
17.5[62] 16–17[10] 16[71]	234 12[10] 224–225 9[71] 169–170 0.03[62]	0 9180 40°[62] 0.9232 30°[62]	1.5282[62]	
5,6-Diphenyldecane 				
80[17]				
2,2,5,5-Tetramethyl-3,4-diphenylhexane 				
185–186[21] 180–181[17]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,6-Di-(2′,4′-dimethylphenyl)-hexane 				
76–77 [9]	247–248 20 [9]			
Di-1,4-(2′,4′,6′-trimethylphenyl)-butane 				
124 [65] 123–124 [44]				
Di-*n*-butyldiphenylethane (a)				
79–79.5(b) [40]	183–184 10(c) [40]	0.9337(c) [40] 0.9490(c) 0° [40]	1.52857 [40]	
(a) The structure of this compound is not given. (b) This constant was determined on the *meso* form. (c) This constant was determined on the *dl* form.				
1,1-Di-*sec*-butylphenylethane (a)				
	250–252 11 [83]			
(a) The position of the butyl groups is not given.				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Di-*tert*-butylphenylethane (a)				
94[53]	212–214 16[53]			
(a) The position of the butyl groups is not given.				
1,2-Di-(4′-*tert*-butylphenyl)-ethane 				
149[48]				
$C_{23}H_{32}$				
1,9-Di-*p*-tolylnonane 				
48–49[9]	248–252 18[9]			
Phenylpentaethylphenylmethane 				
88–89[22]				

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

1,8-Di-(2′,4′-dimethylphenyl)-octane



M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
63–64[9]	253–254	13[9]					

Di-2,4,6-trimethylphenylhexane (a)

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
74[65]							

(a) The position of the trimethylphenyl substitutions is not given.

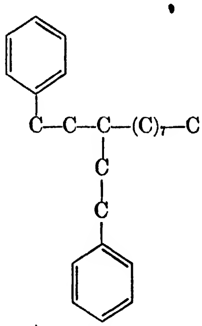
1,1-Di-[x′-(3″-pentyl)-phenyl]-ethane (a)

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	234–236	29[53]					

(a) The position of the pentyl groups is not given.

$C_{25}H_{36}$

1-Phenyl-3-phenethylundecane



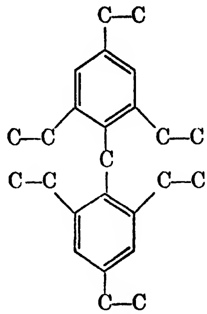
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.9215		**1.5192**		
−54[60]							
	197.0	1.00[60,61]	0.9211[60,61]		1.5192[60,61]		
	184	0.50[61]	0.8689	98.9°[61]	1.5116	40.0°[61]	
			0.8948	60°[61]	1.5154	30.0°[61]	
			0.9093	37.8°[61]			
			0.9356	0°[61]			

* $\frac{dD}{dt} = -0.0006873[1 - 0.0008031(t-20)]/°C$ (0 to 99°C)

† $\frac{dn}{dt} = -0.000380/°C$ (20 to 40°C)

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data

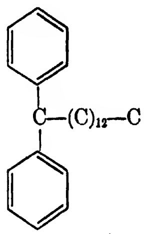
Di-2,4,6-triethylphenylmethane



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
71-72 [49]							

$C_{26}H_{38}$

1,1-Diphenyltetradecane

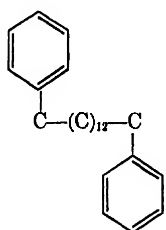


M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			***0.9187**		**1.5202**		
17.9 [18,60,61]	207	1.00 [18,61]	0.9186 [18,60,61]		1.5202 [18,60,61]		
	194	0.5 [18]	0.8659	98.9° [18]	1.5123	40.0° [18]	
			0.8916	60° [18]	1.5162	30.0° [18]	
			0.9068	37.8° [18]			

* $\frac{dD}{dt} = -0.0006787[1 - 0.0003577(t-20)]/°C$ (20 to 99°C)

† $\frac{dn}{dt} = -0.000395/°C$ (20 to 40°C)

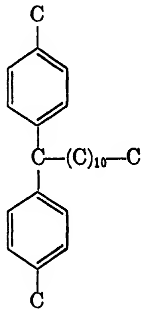
1,14-Diphenyltetradecane



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	262-265	8 [71]					

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,1-Di-*p*-tolyldodecane

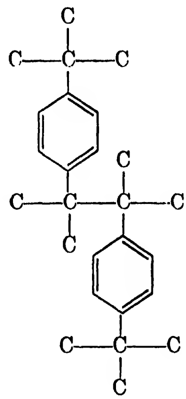


M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
							*
			0.9117		**1.5001**		†
	197.0	1.00 [60]	0.9117 [60]		1.5001 [60]		
	183.0	0.50 [60]	0.8607	98.9° [60]	1.4927	40.0° [60]	
			0.8859	60° [60]	1.4964	30.0° [60]	
			0.9000	37.8° [60]			
			0.9248	0° [60]			

* $\frac{dD}{dt} = -0.0006514[1 - 0.0002067(t-20)]/°C$ (0 to 99°C)

† $\frac{dn}{dt} = -0.000370/°C$ (20 to 40°C)

2,3-Dimethyl-2,3-di-(4′-*tert*-butylphenyl)-butane



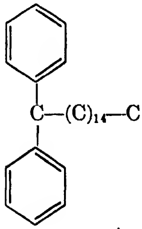
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
225 [74]				

1,2-Di-*n*-hexyldiphenylethane (a)

M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}	Additional Data
59(b) [40]	223 -224(c)	10 [40]	0.9174(c) [40]		1.51770(c) [40]	
			0.9310(c)	0° [40]		

(a) The position of the hexyl substitutions is not given.
(b) This constant was determined on the *meso* form.
(c) This constant was determined on the *dl* form.

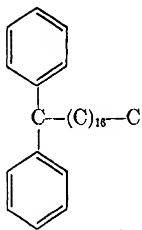
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,1-Diphenylhexadecane  *

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
		0.9130		
			1.5156 [63]	
26 [63]	279–281 15 [39]	0.9117 [63]	1.5121 25° [55]	
	273–275 10 [39]	0.9135 [39,55]	1.51569 16° [39]	
	211–213 0.1 [63]	0.8615 100° [20]	1.51209 $n_{H\alpha}^{16}$ [39]	
		0.8940 50° [20]	1.52508 $n_{H\beta}^{16}$ [39]	
		0.9265 0° [20]	1.53346 $n_{H\gamma}^{16}$ [39]	

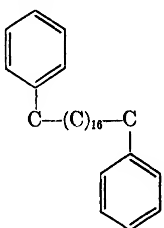
$* \frac{dD}{dt} = -0.0006538[1 - 0.0004246(t-20)]/°C$ (0 to 100°C)

$C_{30}H_{46}$

1,1-Diphenyloctadecane 

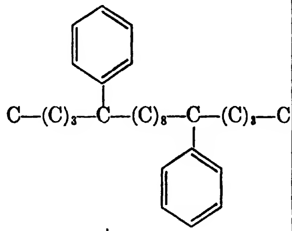
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
		0.9260(a) 25° [47]	1.5138 25° [47]	

(a) This density is an extrapolated value.

1,18-Diphenyloctadecane 

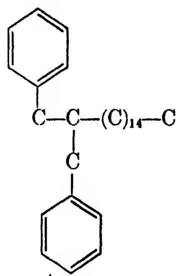
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
61 [62]				

5,14-Diphenyloctadecane



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
		0.9051 25°[47]	1.5110 25°[47]	

1-Phenyl-2-benzylheptadecane



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
		0.9165		
34.5–35[39]	294–296 16[39]	0.9165[39,55]	1.5123 25°[55]	
	287–289 10[39]	0.8642 100°[20]	1.51596 15.9°[39]	
		0.8969 50°[20]	1.51218 $n_{H\alpha}^{15.9}$[39]	
		0.9296 0°[20]	1.52536 $n_{H\beta}^{15.9}$[39]	
			1.53373 $n_{H\gamma}^{15.9}$[39]	

* $\frac{dD}{dt} = -0.0006539/°C$ (0 to 100°C)

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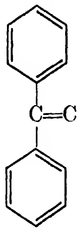
2. TWO PHENYL SUBSTITUTIONS ON ALKENES, C_nH_{2n-16}

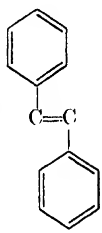
1,1-Diphenylethene



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	277						
8–9 [96,111]	277–280 [101,102]		1.0232 [128]		1.6075 [103]		
8.2 [109]	277 [2,3,47]		1.0253	25° [57]	1.60849 [128]		
7–9(a) [135]	276–277 [112]		1.028	D_0^{21} [101,102]	1.6100 [51]		
	274–276 [34,35]		1.0278	18° [52]	1.6035	30° [135]	
	164	34 [57]	1.0278	15° [96]	1.606	21° [101,102]	
	156	30 [14]	1.038	14° [58]	1.6091_4	19° [30]	
	156	25 [57]	1.0415	0° [96]	1.610	14° [58]	
	155	25 [135]			1.60089	$n_{H\alpha}^{20.0}$ [128]	
	152.5–154	19 [128]			1.6018_8	$n_{H\alpha}^{19}$ [30]	
	147	16 [58]			1.62730	$n_{H\beta}^{20.0}$ [128]	
	148	15 [103]			1·64482	$n_{H\gamma}^{20.0}$ [128]	
	139	11 [68]					
	134–134.5	10 [51]					
	134	10 [63]					
	123–125	5 [1]					
	113	2 [1]					
	94–95	1 [109]					

(a) This figure is given as a freezing point in the literature.

***cis*-1,2-Diphenylethene**
(*cis*-Stilbene)



M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	154–154.5	21 [33]	1.014 [127]		1.6083 [28]		
	150	19 [108]	1.0143 [28]		1.6032	25° [66]	
	148–149	17 [15]	1.014	24° [22]	1.620	13° [22]	
	145	13 [104]	1.020	16° [22]	1.60454	$n_{H\alpha}^{15.9}$ [126]	
	143	13 [108]	1.0171	15.9° [126]	1.60526	$n_{H\alpha}^{15.9}$ [126]	
	140.5–141	13 [23,93]	1.0183	15.9° [126]	1.63385	$n_{H\beta}^{15.9}$ [126]	
	140	12 [20]	1.023	13° [22]	1.63527	$n_{H\beta}^{15.9}$ [126]	
	139–140	12 [22]					
	137	10 [127]					

M. P.,°C	B. P.,°C @ 760mm		D^{20}_4		n^{20}_D		Additional Data
***cis*-1,2-Diphenylethene** (*cis*-Stilbene) (*Continued*)					1.65609	$n^{15.9}_{H\gamma}$ [126]	
					1.6220	n^{20}_{He} [127]	
					1.61277	$n^{15.9}_{He}$ [126]	
	136–137	10 [116]			1.61367	$n^{15.9}_{He}$ [126]	
	134	10 [121,122]					
	133	8 [28]					
	132	1 [118]					
	92	0.1 [81]					
***trans*-1,2-Diphenylethene** (*trans*-Stilbene)							
124.2	**306.5**						
124.5–125.5 [25]	307 [105]		1.039 [127]		1.62179	$n^{21.7}_{H\alpha}$ [129]	
125.0 [125]	306–307 [137,138]		0.9544	125° [124]	1.62213	$n^{19.9}_{H\alpha}$ [129]	
125(a)	306.5 [62]		0.9703	125.0° [11]	1.65474	$n^{21.7}_{H\beta}$ [129]	
124–125(b)	302–304 [72]		0.9707	125.0° [11]	1.65506	$n^{19.9}_{H\beta}$ [129]	
124.5–124.8 [109]	305.0		1.0883	21.7° [129]	1.63108	$n^{21.7}_{He}$ [129]	
124–124.5 [113]	–307.5	744 [70]	1.0888	19.9° [129]	1.6820	n^{20}_{He} [127]	
124.4 [39]	305	720 [61]	1.164	0° [145]	1.63134	$n^{19.9}_{He}$ [129]	
124.2 [89]	168	13 [23]	1.155	(solid) [74]			
124.0 [11]	167	12 [127]	1.156(e) [12]				
124(c)	166–167	12 [22,137]	1.159(e) [46]				
123–124(d)							
123.5 [17,90,124]							
123 [94,95,131,141]							
121–123 [38]							
122 [118]							
121–122 [10]							
121 [13,36,97]							

(a) The melting point 125 is found in references 40, 48, 55, 64, 67, 71, 104, 108, 119, 142.
(b) The melting point 124-125 is found in references 16, 21, 80, 114, 133, 134, 136, 139.
(c) The melting point 124 is found in references 4, 5, 6, 7, 8, 9, 19, 22, 24, 26, 27, 29, 31, 32, 33, 37, 41, 42, 43, 44, 45, 49, 50, 53, 54, 56, 59, 60, 61, 73, 75, 76, 79, 82, 83, 84, 85, 86, 87, 88, 91, 92, 98, 99, 100, 106, 107, 110, 115, 117, 120, 122, 127, 129, 132, 137, 138, 140, 143, 144.
(d) The melting points 123–124 is found in references 18, 65, 69, 72, 77, 78, 81, 116, 123, 130.
(e) The temperature for this density is not given.

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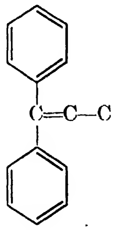
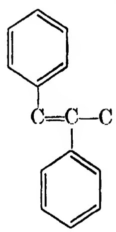
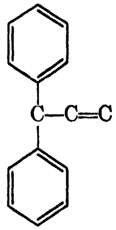
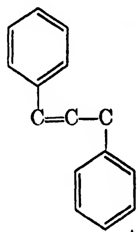
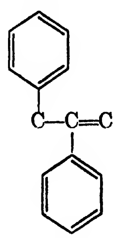
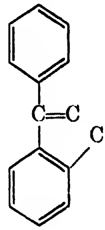
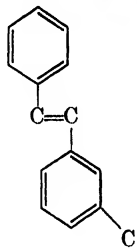
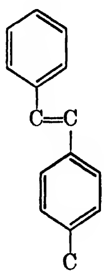
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,1-Diphenylpropene-1 							*
51			**1.0096**				
52 [5,32,38]	284.5 [66,67]		0.9710	78.2° [88]	1.57913	63.5° [90]	
51–52 [88]	280–281 [56]		0.9813	63.5° [90]	1.5815	60° [39]	
51.5 [66,67]	182–184	34 [90]	0.9841	60° [39]	1.593	23° [66,67]	
51 [43,56]	169–170	28 [5,38]	1.0076	D_0^{23} [66,67]	1.56534	$n_{H\alpha}^{78.2}$ [88]	
50.5–51 [35]	149	11 [39]	1.127	0° [102]	1.57197	$n_{H\alpha}^{63.5}$ [90]	
50–50.5 [90]					1.58958	$n_{H\beta}^{78.2}$ [88]	
48–49 [97,98]					1.59638	$n_{H\beta}^{63.5}$ [90]	
48.5 [72]					1.61169	$n_{H\gamma}^{63.5}$ [90]	
					1.57329	$n_{He}^{78.2}$ [88]	

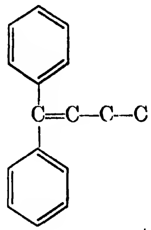
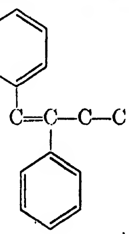
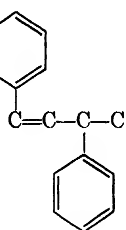
* $\frac{dD}{dt} = -0.0006542/°C$ (20 to 60°C)

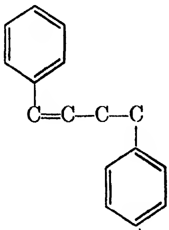
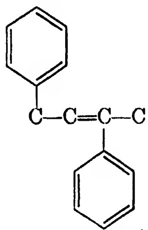
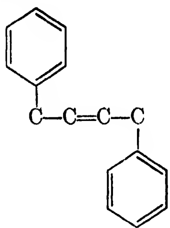
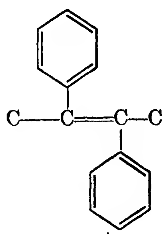
M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,2-Diphenylpropene-1 							
82							
83 [52,70]	285–286 [39]		0.9565	99.9° [92]	1.5635	17° [39]	
82–83 [18,31,38,47,64,92]	285 [66]		0.9857	17° [39]	1.58358	$n_{H\alpha}^{99.9}$ [92]	
82 [34,37,50,66,67,82]	183	26 [38]			1.61469	$n_{H\beta}^{99.9}$ [92]	
81–82 [84]	167(b)	24 [70]			1.59180	$n_{He}^{99.9}$ [92]	
80–81.5 [26]	176–180	19 [84]					
81 [19,93,95]	165	13 [92]					
80–81 [83]	162–165	13 [64]					
48(a) [18]							

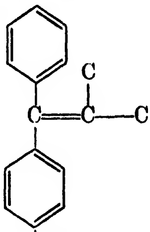
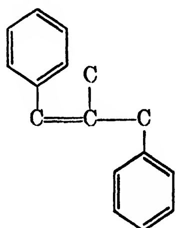
(a) This constant was probably determined on the *cis* isomer.
(b) This constant was determined on the *cis-trans* isomer.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenylpropene-2				
	293[48]	1.0038 D_0^{24} [66,67]	1.596[48]	
	279–281[66,67]	0.8886 21°[63]	1.587 24°[66,67]	
	94 14[63]		1.5337 21°[63]	
1,3-Diphenylpropene-1				
57[24]	276[24]	1.012 19.5°[20]	1.5949 19.5°[20]	
15–16[80]	175–176 17[46]	1.0003 17°[9]	1.6010 17.5°[9]	
	174–175 16[20]			
	171–173 16[5]			
	178–179 15[15]			
	178–179 14[80]			
	174–175 12[74]			
	164 12[87]			
	164–168 11[9]			
	170 10[7]			
1,2-Diphenylpropene-2				
48[87]	289 757[87]	1.10143[94]	1.5903[94]	
	140–143 0[94]			

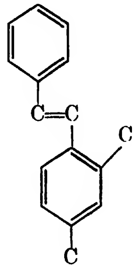
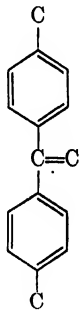
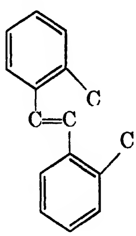
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-Phenyl-1-*o*-tolylethene 							
	145–146	13 [6]					
1-Phenyl-2-*m*-tolylethene 							
52.5–53.5 [91]	206–207	30 [91]	1.026 [42]		1.655 [42]		
			0.9891	60.5° [91]	1.63628	60.5° [91]	
					1.62501	$n_{H\alpha}^{60.5}$ [91]	
					1.66983	$n_{H\beta}^{60.5}$ [91]	
1-Phenyl-2-*p*-tolylethene 							
119.5							
120 [1]	192	30 [40]					
119–120 [84]	175–180	17 [84]					
119.6 [62]	160–161	11 [84]					
117 [40,53,75]	145–146	6 [84]					

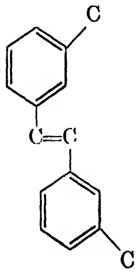
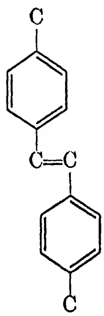
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenylbutene-1 				
	295–297 [66,68]	0.9937 [71]	1.5904 [71]	
	291–292 [56]	1.030 18° [39]	1.5915 18° [39]	
	286 750 [39]	1.0039 D_0^{16} [66,68]	1.595 16° [66,68]	
	154 20 [39]			
	157–158 14 [70]			
	158–159 13 [5]			
	108–110 0.4 [71]			
1,2-Diphenylbutene-1 				
57 [39,78]	296–297 [39]	1.0124 D_0^{18} [66,68]	1.593 18° [66,68]	
56.5 [78]	296 [68]			
	294–296 [66]			
	162–167 12–14 [78]			
1,3-Diphenylbutene-1 				
47–47.5 [54]	312 [76,77]		1.590 [79]	
	175–176 14 [79]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Diphenylbutene-1 				
124 [77,86] 39 [25]	310–312 [22] 310 [41]	1.016 15° [22] 1.027 0° [22]		
$C_{16}H_{16}$ **1,3-Diphenylbutene-2** 				
	169–170 12 [79]	1.0149 20.6° [79]		
1,4-Diphenylbutene-2 				
45–45.5 [51,81,101]	73 14 [81]			
cis-2,3-Diphenylbutene-2 				
66 66–67 [36] 66 [60,89] 65–66 [65] 64–66 [87]		1.004 [89] 0.9537 77.8° [87]	1.55466 $n_{H\alpha}^{77.8}$ [87] 1.57742 $n_{H\beta}^{77.8}$ [87] 1.56116 $n_{H\gamma}^{77.8}$ [87] 1.5919 n_{He}^{20} [89]	

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
***trans*-2,3-Diphenylbutene-2**							
106.5							
108[65]	156–158	16[69]	0.987[89]		1.6173	n_{He}^{20} [89]	
107[60,67,69]							
105[36,69]							
104–105[44,45]							
1,1-Diphenyl-2-methylpropene-1 							
11–11.5[100]	293[66,68]		1.000[88]		1.596	16°[66,68]	
11.2–11.3[23]	280–282	775[44]	1.0021	17.6°[88]	1.58167	$n_{H\alpha}^{17.6}$ [88]	
	150–152	15[65]	1.0240	D_0^{16} [66,68]	1.60512	$n_{H\beta}^{17.6}$ [88]	
	152–154	14[88]	1.010	0°[44]	1.62055	$n_{H\gamma}^{17.6}$ [88]	
	152–153	14[69]			1.5875	n_{He}^{20} [88]	
	146–147	12[99]			1.58855	$n_{He}^{17.6}$ [88]	
	145.5–146.0	10[23]					
1,3-Diphenyl-2-methylpropene-1 							
	315[49]		1.0181	D_0^{16} [66,68]	1.587	18°[49]	
	304[66,68]		1.037	0°[49]	1.593	16°[66,68]	
	188–189	25[85]					
	175–177	20[49]					
1-Phenyl-2-ethylphenylethene (a)							
89–90[73]							

(a) The position of the ethyl group is not given.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2-(2′,4′-dimethylphenyl)-ethene 				
40–41 [23]				
1,1-Di-*p*-tolylethene 				
61–62 [21] 61 [2,8]	163–165 13 [2]			
1,2-Di-*o*-tolylethene 				
82.5–83.0 [96] 82–83 [75]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Di-*m*-tolyethene				
55–56 [4]	134–139 5 [55] 118 3 [55]	1.0003 [55]	1.5922 [55]	
1,2-Di-*p*-tolylethene				
178 181 [61] 179–180 [59,96] 179 [8,10] 178 [11,75] 177–178 [33] 177 [12,13,16,17,30] 176–177 [4,14,27,58]	304–305 [16]			

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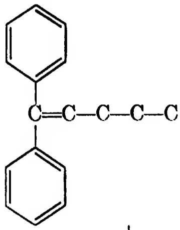
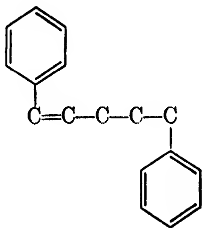
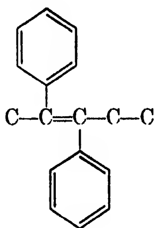
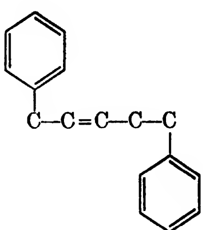
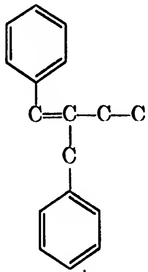
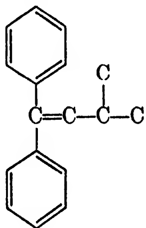
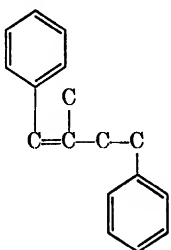
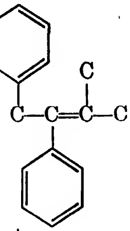
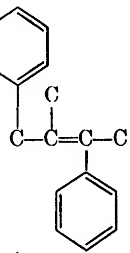
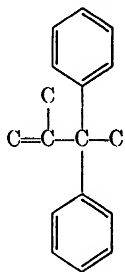
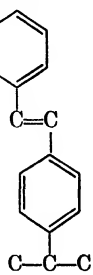
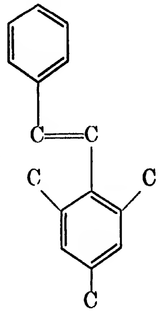
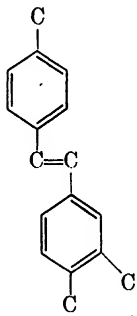
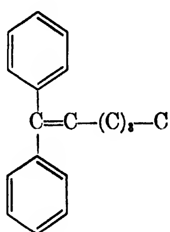
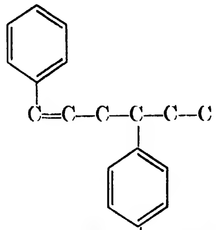
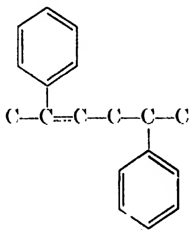
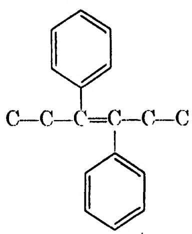
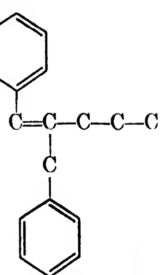
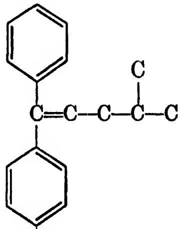
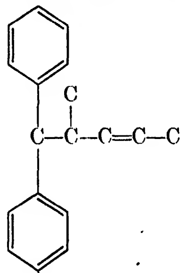
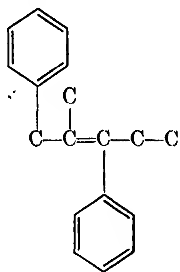
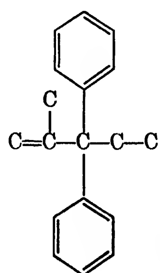
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenylpentene-1 				
	174–175 14[43] 170 13[20]	1.0139 0°[20]	1.57768 15°[20]	
1,5-Diphenylpentene-1 				
	186 11[8]			
2,3-Diphenylpentene-2 				
	297–299[23] 297–299 765[22]	1.040 0°[23]		
1,5-Diphenylpentene-2 				
	184–185 10[8]			

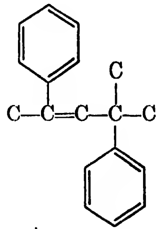
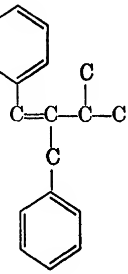
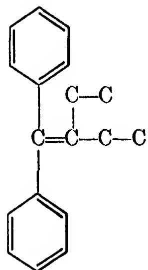
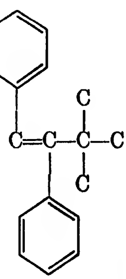
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2-benzylbutene-1 				
	304–305 [40] 177–178 15 [7] 183–185 14 [24]	0.9736 D_0^{21} [40] 1.012 0° [24] 0.9855 D_0^{0} [40]	1.553 21° [40] 1.5785 18° [24]	
1,1-Diphenyl-3-methylbutene-1 				
	298–299 [39,40] 296–299 [41] 169–170 20 [20] 166–168 18 [49]	0.978 [49] 0.9792 D_0^{21} [39,40] 0.9813 17.0° [49] 0.9946 0° [20]	1.581 21° [39,40] 1.5754 15° [20] 1.57015 $n_{H\alpha}^{17.0}$ [49] 1.59269 $n_{H\beta}^{17.0}$ [49] 1.60724 $n_{H\gamma}^{17.0}$ [49] 1.5753 n_{He}^{20} [49] 1.57667 $n_{He}^{17.0}$ [49]	
1,4-Diphenyl-2-methylbutene-1 				
	205–206 40 [30]			

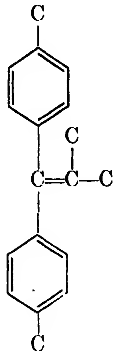
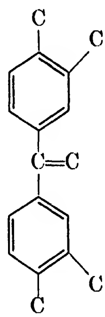
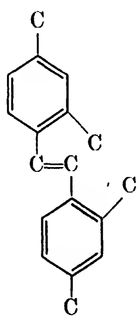
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Diphenyl-3-methylbutene-2 				
	176–178 26[19] 170–172 20[1] 168 20[1] 150 10[19]		1.5632 24°[19]	
1,3-Diphenyl-2-methylbutene-2 				
	176–177 20[1]			
2-Methyl-3,3-diphenylbutene-1 				
	132–133 4.5[2]	1.0060[2]	1.5757[2]	
1-Phenyl-2-(4′-isopropylphenyl)-ethene 				
86[55] 85[12] 84[18] 83–84[27]				

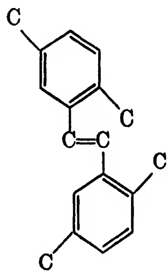
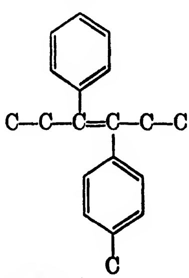
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2-(2′,4′,6′-trimethylphenyl)-ethene 				
55–56 [14]				
1-*p*-Tolyl-2-(3′,4′-dimethylphenyl)-ethene 				
120–121 [47]				
$C_{18}H_{20}$				
1,1-Diphenylhexene-1 				
73 [33]	314 [26] 188 18 [20] 184 15 [43]			

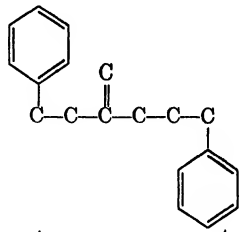
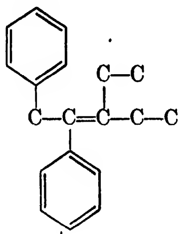
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Diphenylhexene-1 				
	217–219 30[52]	0.9915[37,50]	1.58800[37,50]	
	190–191 11[51]	0.9892 21.8°[51]	1.58749 22.8°[51]	
	190 11[37,50]		1.58083 $n_{H\alpha}^{22.8}$[51]	
			1.60490 $n_{H\beta}^{22.8}$[51]	
			1.62049 $n_{H\gamma}^{22.8}$[51]	
2,5-Diphenylhexene-2 				
	302[16]	0.9724 21°[16]		
	175 16[48]	1.012 0°[48]		
3,4-Diphenylhexene-3 				
76[54]	168 14[35,36]			
	165 14[54]			
1-Phenyl-2-benzylpentene-1 				
	315–317[24]	0.9775[24]	1.57 18°[24]	

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenyl-4-methylpentene-1 				
	178–180 17[20]	0.9725 25°[45]	1.57463 17.8°[45]	
	178 16[45]	0.9907 0°[45]		
1,1-Diphenyl-2-methylpentene-3 				
	174 20[3]			
	153–154 14[3]			
1,3-Diphenyl-2-methylpentene-2 				
	178–180 18[1]			
2-Methyl-3,3-diphenylpentene-1 				
	175–177 16[1]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,4-Diphenyl-4-methylpentene-2 				
	170–171 17[4]			
1-Phenyl-2-benzyl-3-methylbutene-1 				
	315–317[24]		1.571 18°[24]	
1,1-Diphenyl-2-ethylbutene-1 				
	160 11[35,36]			
1,2-Diphenyl-3,3-dimethylbutene-1 				
48–49[34]	164–165 11[34]			

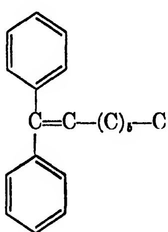
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Di-*p*-tolyl-2-methylpropene-1				
50 [43]				
1,2-Di-(ethylphenyl)-ethene (a)				
134.5 [15]				
(a) The position of the ethyl groups is not given.				
1,1-Di-(3′,4′-dimethylphenyl)-ethene				
73–74 [6]				
1,2-Di-(2′,4′-dimethylphenyl)-ethene				
125.5–126(a) [29] 106 [11] 105–106 [15]				

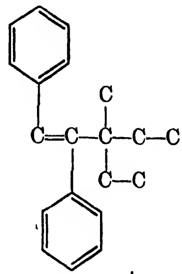
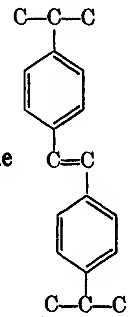
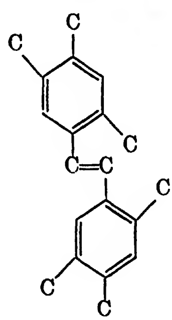
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Di-(2′,4′-dimethylphenyl)-ethene *(Continued)*				
105 [10]				
104–105 [47]				
65–65.5(b) [29]				
(a) This constant was determined on the *cis* isomer. (b) This constant was determined on the *trans* isomer.				
1,2-Di-(2′,5′-dimethylphenyl)-ethene 				
157 [5,10,16]				
$C_{19}H_{22}$				
1,1-Diphenyl-*n*-heptene (a)				
		0.9673 18° [17]	1.5648 18° [17]	
(a) The position of the double bond is not given.				
1,7-Diphenylheptene (a)				
	201–203 10 [8]			
(a) The position of the double bond is not given.				
3-Phenyl-4-*p*-tolylhexene-3 				
	170 11 [85,86]			

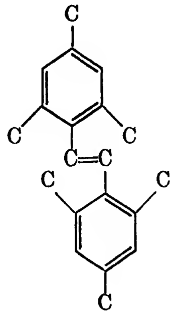
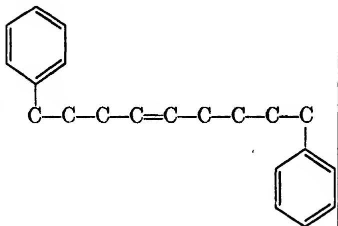
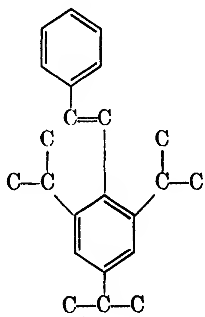
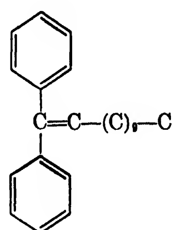
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,6-Diphenyl-3-methylenehexane 							
	199–200	14 [53]	0.915	18° [53]	1.5517	18° [53]	
1,2-Diphenyl-3-ethylpentene-2 							
	180–182	15 [1]					
1-Phenyl-1-*p*-tolyl-2-ethylbutene (a)							
	172	11 [35,36]					

(a) The position of the double bond is given as 1 in reference 36 and as 2 in reference 35

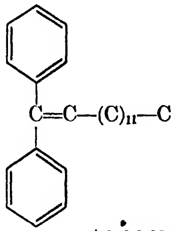
$C_{20}H_{24}$

M. P., °C	B. P., °C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenyloctene-1 					
−6–−5.5 [44]	133–134	0.05 [44]	0.9937 [44]	1.5608 [44]	

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Diphenyl-3-methyl-3-ethylpentene-1 				
	175–180 12[34]	0.9791 25°[34]	1.56671 25°[34] 1.56110 $n^{25}_{H\alpha}$[34] 1.58131 $n^{25}_{H\beta}$[34] 1.59467 $n^{25}_{H\gamma}$[34]	
1,2-Di-(4′-isopropylphenyl)-ethene 				
131–132[25] 129[31]				
1,2-Di-(2′,4′,5′-trimethylphenyl)-ethene 				
161[5,10] 159–161[32]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Di-(2′,4′,6′-trimethylphenyl)-ethene 				
132.5–133.5 [14]				
$C_{21}H_{26}$				
1,9-Diphenylnonene-4 				
	231–233 12 [8]			
1-Phenyl-2-(2′,4′,6′-triisopropylphenyl)-ethene 				
33–34 [14]	155–161 4 [14]			
$C_{24}H_{32}$				
1,1-Diphenyldodecene-1 				
5–6 [44]	170–171 0.05 [44]	0.9334 [44]	1.5429 [44]	

1,1-Diphenyltetradecene-1



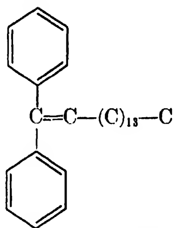
M. P., °C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.9268		1.5363		
16.3 [9,42]	205	1.0 [9]	0.9267 [9,42]		1.5363 [9,42]		
	192	0.5 [9]	0.8725	98.9° [9]	1.5280	40.0° [9]	
			0.8986	60° [9]	1.5322	30.0° [9]	
			0.9143	37.8° [9]			

$* \frac{dD}{dt} = -0.0007152[1 - 0.0004820(t-20)]/°C$ (37 to 99°C)

$† \frac{dn}{dt} = -0.000415/°C$ (20 to 40°C)

$C_{28}H_{40}$

1,1-Diphenylhexadecene-1

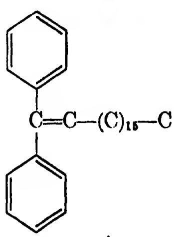


M. P., °C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
			0.9188				
25.5 [44]	265–270	13 [46]	0.9186 [21]		1.5312 [44]		
21.5–22.5 [21]	274–275	12 [21]	0.9191 [44]		1.52964	21.5° [21]	
17–18 [46]	196–197	0.04 [44]	0.8666	100° [13]	1.52008	$n_{H\alpha}^{21.5}$ [21]	
			0.8991	50° [13]	1.54146	$n_{H\beta}^{21.5}$ [21]	
			0.9316	0° [13]	1.55160	$n_{H\gamma}^{21.5}$ [21]	

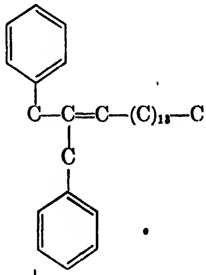
$* \frac{dD}{dt} = -0.0006520/°C$ (0 to 100°C)

$C_{30}H_{44}$

1,1-Diphenyloctadecene-1



M. P., °C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
−1 [46]	282–283	18 [46]	0.9186 [44]		1.5308 [44]		
	202–203	0.04 [44]	0.9170	25° [28]	1.5269	25° [28]	

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2-benzylheptadecene-2 				*
		0.9237		
58.5 [21]	290-292 16 [21]	0.9237 [21]	1.52303 23.5° [21]	
		0.8717 100° [13]	1.51882 $n_{H\alpha}^{23.5}$ [21]	
		0.9042 50° [13]	1.53302 $n_{H\beta}^{23.5}$ [21]	
		0.9367 0° [13]	1.54220 $n_{H\gamma}^{23.5}$ [21]	

* $\frac{dD}{dt} = -0.0006500/°C$ (6 to 100°C)

$C_{42}H_{68}$

1,1-Di-(methylphenyl)-octacosene-1 (a)

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
47 [38]				

(a) The position of the methyl substituents is not given.

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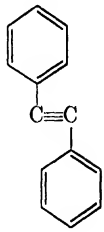
3. TWO PHENYL SUBSTITUTIONS ON ALKYNES, C_nH_{2n-18}

$C_{14}H_{10}$

Diphenylethyne
(Diphenylacetylene)
(Tolane)

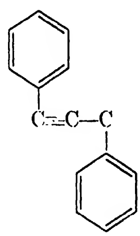


M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
60.9							
62–63.5 [45]	170	19 [35]	0.9657	99.8° [42]	1.60600	$n_{H\alpha}^{99.8}$ [42]	
62.5 [32,41]	158	12 [3]			1.64302	$n_{H\beta}^{99.8}$ [42]	
62 [2,30,44]	158–160	10.5 [25]			1.6163	$n_{H\gamma}^{99.8}$ [42]	
60.5–61.5 [43]	133	8 [5]					
61 [18,34]	111–112	1 [23]					
60–61 [10,11,27,34,36]							
59–61 [38]							
59.5–60.5 [39]							
60(a)							
59 [5]							
58–59 [35]							

(a) The melting point 60 is found in references 1, 3, 4, 9, 12, 17, 18, 19, 24, 25, 26, 27, 28, 29, 31, 33, 40.

$C_{15}H_{12}$

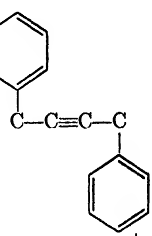
1,3-Diphenylpropyne



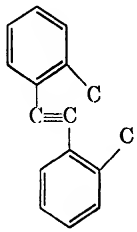
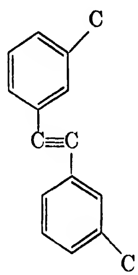
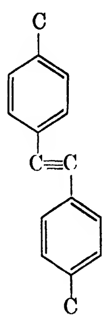
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
	128–129	1–2 [21]	1.0273 [21]		1.5946 [21]		
					1.5881	$n_{H\alpha}^{20}$ [21]	
					1.6113	$n_{H\beta}^{20}$ [21]	

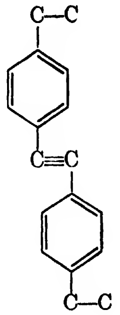
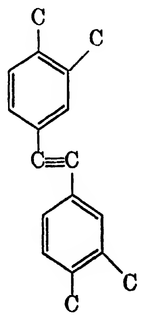
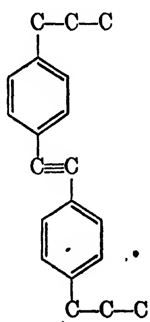
$C_{16}H_{14}$

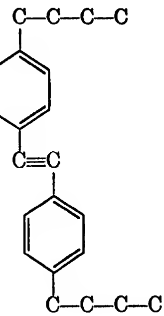
1,4-Diphenylbutyne-2



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
80 [14,15,16]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Di-*o*-tolylethyne				
			1.6228 [6]	
Di-*m*-tolylethyne				
73.5–74 [6]				
Di-*p*-tolylethyne				
136 [4,8,13,20] 135 [17]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Di-(4-ethylphenyl)-ethyne 				
71.5–72.5 [7] 72 [23]				
Di-(3,4-dimethylphenyl)-ethyne 				
143–144 [7]				
$C_{20}H_{22}$				
Di-(4-*n*-propylphenyl)-ethyne 				
69.5–70.5 [7]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Di-(4-*n*-butylphenyl)-ethyne 				
41–42[7]				

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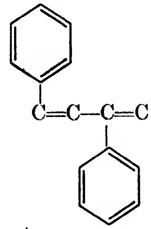
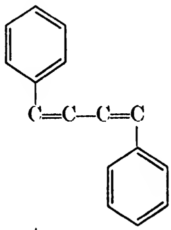
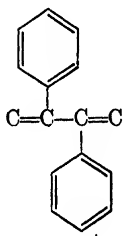
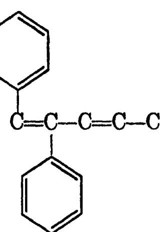
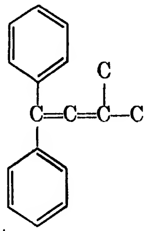
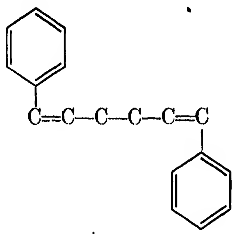
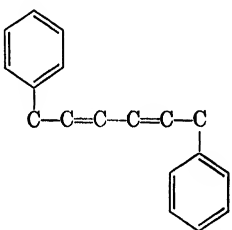
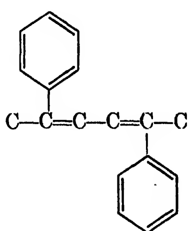
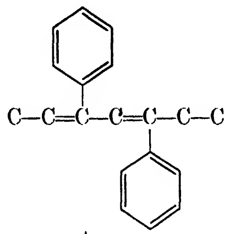
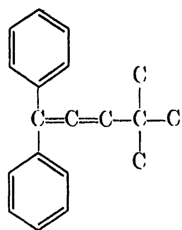
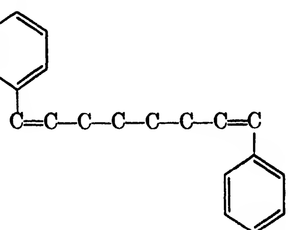
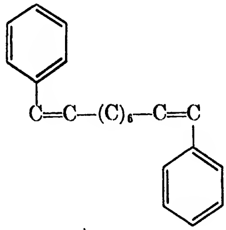
M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,3-Diphenylbutadiene-1,3 (a) 							
138 [43]							
137 [8]							
(a) This compound is given as 2,5-diphenylbutadiene but is probably the 1,3-compound.							
***cis,cis*-1,4-Diphenylbutadiene-1,3** 							
70–70.5 [40]			0.9697	100.6° [45]	1.61831	$n_{H\alpha}^{100.6}$ [45]	
70 [11,12,22,24]			0.9707	99.5° [45]	1.66748	$n_{H\beta}^{100.6}$ [45]	
					1.63473	$n_{H\epsilon}^{100.6}$ [45]	
***cis,trans*-1,4-Diphenylbutadiene-1,3**							
					1.59679	$n_{H\alpha}^{22.2}$ [45]	
150–151 [40]	133–135	0.1 [24]	0.999 [45]		1.61716	$n_{H\alpha}^{19.7}$ [45]	
88 [13]			1.007 [45]		1.62830	$n_{H\beta}^{22.2}$ [45]	
			0.9974	22.2° [45]	1.65481	$n_{H\beta}^{19.7}$ [45]	
			1.0072	19.7° [45]	1.65212	$n_{H\gamma}^{22.2}$ [45]	
					1.68419	$n_{H\gamma}^{19.7}$ [45]	
					1.60532	$n_{H\epsilon}^{22.2}$ [45]	
					1.6063	$n_{H\epsilon}^{20}$ [45]	
					1.6272	$n_{H\epsilon}^{20}$ [45]	
					1.62737	$n_{H\epsilon}^{19.7}$ [45]	
***trans,trans*-1,4-Diphenylbutadiene-1,3**							
149.7							
152.5–153.5 [9]	350	720 [18]					
152–153.5 [16]							
152–153 [39]							

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}		n_D^{20}		Additional Data
***trans, trans*-1,4-Diphenylbutadiene-1,3** (*Continued*)						
152.5 [18]						
152–152.5 [41]						
152 [38]						
151 [17]						
150–151 [40]						
150 [11,12,13,17,47]						
149 [43]						
148–149 [3]						
148.4 [25]						
148 [7,13,21,37,48,49]						
147–148 [28,31]						
147 [32,33]						
2,3-Diphenylbutadiene-1,3 						
49						
50 [23]		0.9842	65.9° [44]	1.57939	$n_{H\alpha}^{65.9}$ [44]	
49 [15]		0.9829	65.8° [44]	1.57920	$n_{H\alpha}^{65.8}$ [44]	
47–49 [44]				1.60496	$n_{H\beta}^{65.9}$ [44]	
47–48 [1]				1.60469	$n_{H\beta}^{65.8}$ [44]	
46–48 [44]				1.62213	$n_{H\gamma}^{65.9}$ [44]	
46–47 [1]				1.62186	$n_{H\gamma}^{65.8}$ [44]	
				1.58669	$n_{H\epsilon}^{65.9}$ [44]	
				1.58633	$n_{H\epsilon}^{65.8}$ [44]	
$C_{17}H_{16}$						
1,2-Diphenylpentadiene-1,3 						
48–49 [6]	158–160 5–6 [6]					

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenyl-3-methylbutadiene-1,2 				
	147–148 20[2]			
$C_{18}H_{18}$				
1,6-Diphenylhexadiene-1,5 				
82[80] 81–82[5,46] 81[27,34]	211 11[30] 180 5[46] 157–160 2[10]	0.9919 D_{20}^{20} [10]	1.5890[10]	
1,6-Diphenylhexadiene-2,4 				
79[18A] 78[19]				
2,5-Diphenylhexadiene-2,4 				
138[42] 134–136[14]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Isodicinnamyl (a)				
	187–189 13[26]	0.9986 18°[26]	1.58724 18°[26]	
(a) The structure is not given, but the compound is probably a diphenylhexadiene.				
$C_{19}H_{20}$				
3,5-Diphenylheptadiene-2,4 				
	191–195 20[29]			
1,1-Diphenyl-4,4-dimethylpentadiene-1,2 				
	115–118 0.55[36]	0.9661[36]	1.569[36]	
$C_{20}H_{22}$				
1,8-Diphenyloctadiene-1,7 				
61–62[5]				

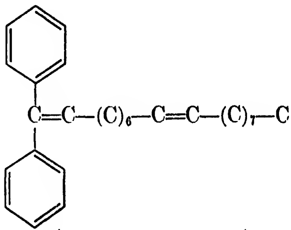
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,10-Diphenyldecadiene-1,9				



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
53 [4,34]				

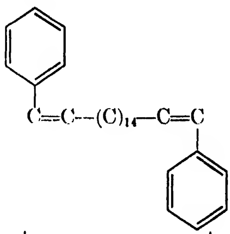
$C_{30}H_{42}$

1,1-Diphenyloctadecadiene-1,9



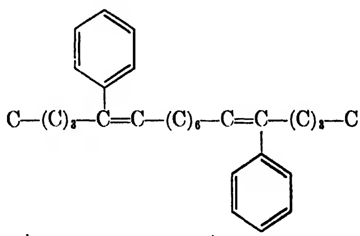
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	285–290 20 [35] 285–286 15 [35]			

1,18-Diphenyloctadecadiene-1,17



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
93 [34]				

5,14-Diphenyloctadecadiene-5,13



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
		0.9306 25° [20]	1.5398 25° [20]	

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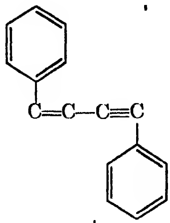
5. TWO PHENYL SUBSTITUTIONS ON ALKENYNES, C_nH_{2n-20}

1,4-Diphenylbuten-1-yne-3



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
96.5–97[3]	188(b) 12[1,2]			
95.5–96.25(a)[3]	187.5			
95–96(a)[1,2]	–188(c) 12[3]			

(a) This constant was determined on the *trans* isomer.
(b) This constant was determined on a mixture of *cis* and *trans* isomers.
(c) This constant was determined on the *cis* isomer.

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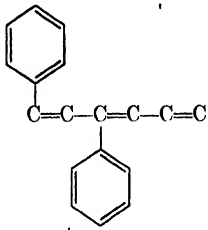
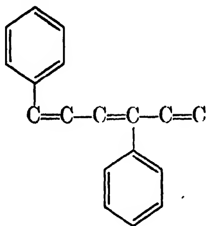
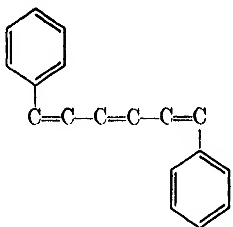
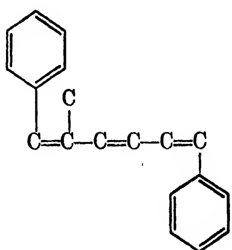
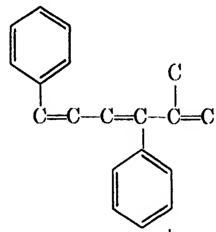
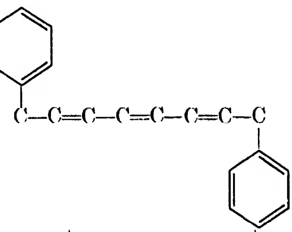
6. TWO PHENYL SUBSTITUTIONS ON ALKATRIENES, C_nH_{2n-20}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3-Diphenylhexatriene-1,3,5 				
194 [12,13]				
1,4-Diphenylhexatriene-1,3,5 				
196 [8]				
1,6-Diphenylhexatriene-1,3,5 				
202 [9] 201 [5] 200 [6]		1.139 [4]		
$C_{19}H_{18}$				
1,6-Diphenyl-2-methylhexatriene-1,3,5 				
115–116 [1]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Diphenyl-5-methylhexatriene-1,3,5 				
97-98 [11]				
$C_{20}H_{20}$				
1,8-Diphenyloctatriene-2,4,6 				
68 [7]				
Diphenyldibutadiene (a)				
	221 17 [8] 217-220 17 [2] 205 10(b)[10] 194 3(c)[10]	1.0325 [8]	1.6016 [8]	

(a) Structures were not given. The constants were probably determined on more than one compound.
(b) The author stated that this constant was determined on the dimer of *cis*-phenylbutadiene.
(c) The author stated that this constant was determined on the dimer of *trans*-phenylbutadiene.

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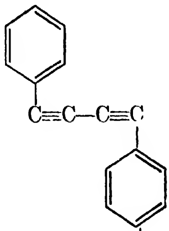
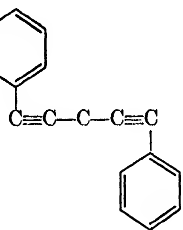
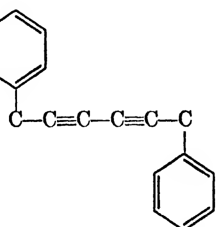
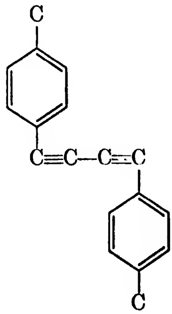
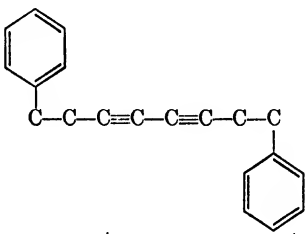
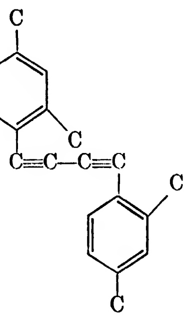
7. TWO PHENYL SUBSTITUTIONS ON ALKADIYNES, C_nH_{2n-22}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Diphenylbutadiyne (Diphenyldiacetylene) 				
88				
87–88.5 [14]		0.88674 [9]	1.50513 [9]	
88.0 [11]		0.9056 13° [9]	1.5300 13° [9]	
88 [2,6,8]			1.50275 $n_{H\alpha}^{20}$ [9]	
87–88 [10,17]			1.5240 $n_{H\alpha}^{13}$ [9]	
87 [1,8]				
86.5–87 [5]				
86–87 [12,15,16]				
85–87 [13]				
$C_{17}H_{12}$				
1,5-Diphenylpentadiyne-1,4 				
88–90 [3]				
$C_{18}H_{14}$				
1,6-Diphenylhexadiyne-2,4 				
101 [5]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Di-*p*-tolylbutadiyne 				
183[7]				
$C_{20}H_{18}$				
1,8-Diphenyloctadiyne-3,5 				
118[8]				
1,4-Di-(2′·4′-dimethylphenyl)-butadiyne 				
145.5–146[5] 138[4]				

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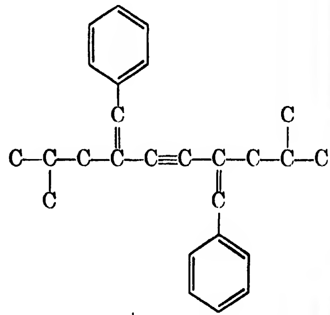
8. TWO PHENYL SUBSTITUTIONS ON ALKADIENYNES, C_nH_{2n-22}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,9-Dimethyl-4,7-dibenzylidenedecyne-5 				
	179–180 2[1]	0.9951[1]	1.5872[1]	

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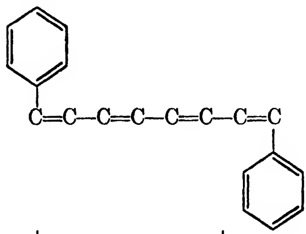
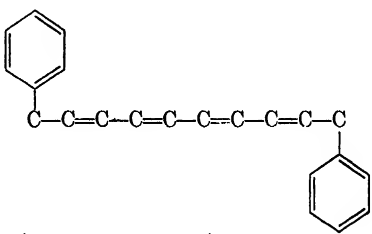
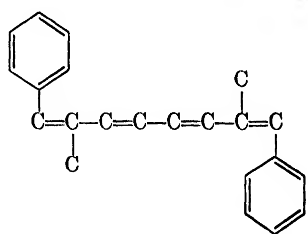
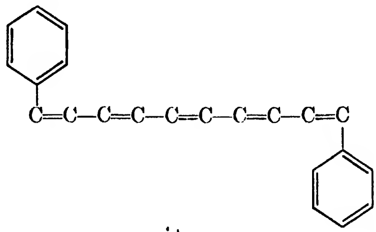
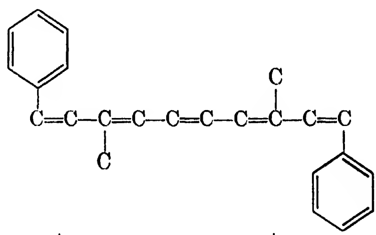
9. TWO PHENYL SUBSTITUTIONS ON ALKATETRAENES, C_nH_{2n-22}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,8-Diphenyloctatetraene-1,3,5,7 				
235–237[7] 233[3] 232[4,6]		1.144[2]		
$C_{22}H_{22}$				
1,10-Diphenyldecatetraene-2,4,6,8 				
109–110[5]				
1,8-Diphenyl-2,7-dimethyloctatetraene-1,3,5,7 				
176.5[3] 174[1]				

References on Two Phenyl Substitutions on Alkatetraenes

1. Bernhauer, K., and I. Skudezyk, J. prakt. Chem. [2] 155, 310 1940.
2. Hengstenberg, J., and R. Kuhn, Z. Krist. 75, 301 1930.
3. Kuhn, R., and K. Wallenfels, Ber. 71, 1889 1938.
4. Kuhn, R., and A. Winterstein, Helv. Chim. Acta 11, 87 1928.
5. Kuhn, R., and A. Winterstein, Helv. Chim. Acta 11, 123 1928.
6. Müller, E., and I. Dammerau, Ber. 70, 2561 1937.
7. Zechmeister, L., and A. L. LeRosen, J. Am. Chem. Soc. 64, 2755 1942.

10. TWO PHENYL SUBSTITUTIONS ON ALKAPENTANES, C_nH_{2n-24}

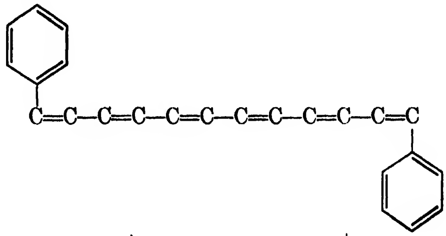
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,10-Diphenyldecapentaene-1,3,5,7,9 				
253 [3,4]		1.152(a)[1]		
(a) The temperature for this density is not given.				
$C_{24}H_{24}$				
1,10-Diphenyl-3,8-dimethyldecapentaene-1,3,5,7,9 				
196–197 [2]				

References on Two Phenyl Substitutions on Alkapentaenes

1. Hengstenberg, J., and R. Kuhn, Z. Krist. 75, 301 1930.
2. Kuhn, R., and K. Wallenfels, Ber. 71, 1889 1938.
3. Kuhn, R., and A. Winterstein, Helv. Chim. Acta 11, 87 1928.
4. Müller, E., and I. Dammerau, Ber. 70, 2561 1937.

11. TWO PHENYL SUBSTITUTIONS ON ALKAHEXAENES, C_nH_{2n-26}

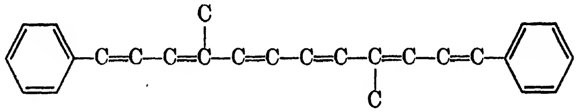
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,12-Diphenyldodecahexaene-1,3,5,7,9,11				
268[4] 267[3,5]		1.135(a)[2]		



(a) The temperature for this density is not given.

$C_{26}H_{26}$

1,12-Diphenyl-4,9-dimethyl-dodecahexaene-1,3,5,7,9,11

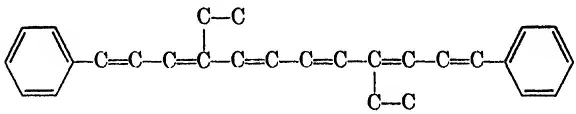


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
217(a)[1]				

(a) Decomposition takes place at the melting point.

$C_{28}H_{30}$

1,12-Diphenyl-4,9-diethyl-dodecahexaene-1,3,5,7,9,11



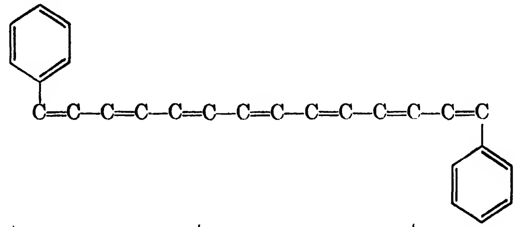
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
206.5-209.5[1]				

References on Two Phenyl Substitutions on Alkahexaenes

1. Bernhauer, K., and I. Skudrzyk, J. prakt. Chem. [2] 155, 310 1940.
2. Hengstenberg, J., and R. Kuhn, Z. Krist. 75, 301 1930.
3. Kuhn, R., Angew. Chem. 50, 703 1937.
4. Kuhn, R., and K. Wallenfels, Ber. 70, 1331 1937.
5. Kuhn, R., and A. Winterstein, Helv. Chim. Acta 11, 87 1928.

12. TWO PHENYL SUBSTITUTIONS ON ALKAHEPTAENES, C_nH_{2n-28}

1,14-Diphenyltetradecaheptaene-1,3,5,7,9,11,13



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
279[2]		1.130(a)[1]		

(a) The temperature for this density is not given.

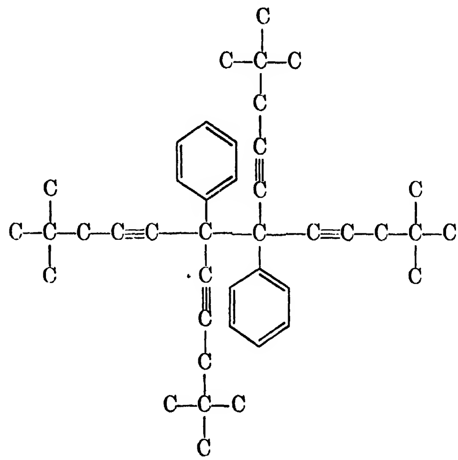
References on Two Phenyl Substitutions on Alkaheptaenes.

1. Hengstenberg, J., and R. Kuhn, Z. Krist. **75**, 301 1930.
2. Kuhn, R., and A. Winterstein, Helv. Chim. Acta **11**, 87 1928.

13. TWO PHENYL SUBSTITUTIONS ON ALKATETRAYNES, C_nH_{2n-30}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

2,2,11,11-Tetramethyl-6,7-di-(4′,4′-dimethylpentyn-1′-yl)-6,7-diphenyldodecadiyne-4,8



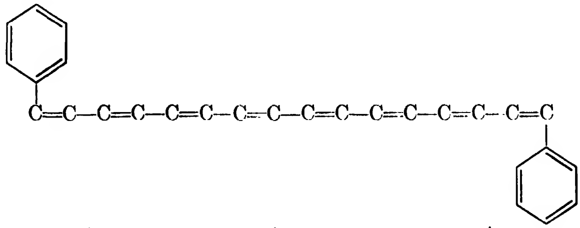
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
98–99 [1]				

References on Two Phenyl Substitutions on Alkatetraynes

1. Rossander, S. S., and C. S. Marvel, J. Am. Chem. Soc. 51, 932 1929.

14. TWO PHENYL SUBSTITUTIONS ON ALKAOCTAENES, C_nH_{2n-30}

1,16-Diphenylhexadeca-octaene-1,3,5,7,9,11,13,15

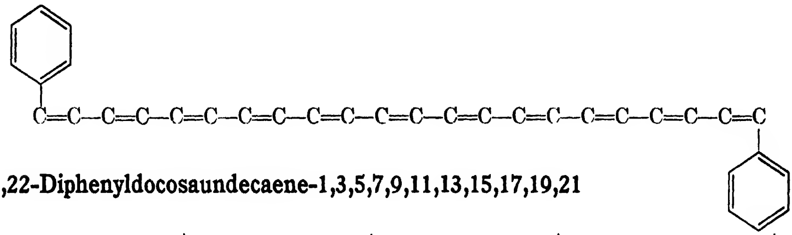


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
285 [1]				

References on Two Phenyl Substitutions on Alkaoctaenes

1. Kuhn, R., and A. Winterstein, Helv. Chim. Acta **11**, 87 1928.

15. TWO PHENYL SUBSTITUTIONS ON ALKAUNDECAENES, C_nH_{2n-36}



1,22-Diphenyldocosaundecaene-1,3,5,7,9,11,13,15,17,19,21

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
318[1]				

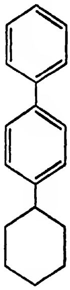
References on Two Phenyl Substitutions on Alkaundecaenes

1. Kuhn, R., Angew. Chem. 50, 703 1937.

VI. BIPHENYL WITH ALICYCLIC SUBSTITUTIONS

1. Biphenyl with One Cyclyl Substitution C_nH_{2n-16}
2. Biphenyl with One Cyclenyl Substitution C_nH_{2n-18}
3. Biphenyl with Two Cyclyl Substitutions C_nH_{2n-18}

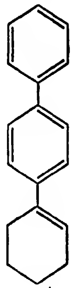
1. BIPHENYL WITH ONE CYCLYL SUBSTITUTION, C_nH_{2n-16}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4-Cyclohexylbiphenyl				
75				
75–76[2]	213–222 15[4]			
75[3]	207–210 12[3]			
73–75[5]				
74 5[1]				

References on Biphenyl with One Cyclyl Substitution

1. Basford, F. R., J. Chem. Soc. **1936**, 1593.
2. Bodroux, D., Ann. chim. [10] **11**, 511 1929.
3. Buu-Hoï and P. Cagniant, Compt. rend. **216**, 381 1943; C.A. **38**, 2334 1938.
4. France, H., I. N. Heilbron, and D. H. Hey, J. Chem. Soc. **1938**, 1364.
5. Hückel, W., and H. Bretschneider, Ann. **540**, 157 1939.

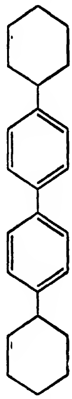
2. BIPHENYL WITH ONE CYCLENYL SUBSTITUTION, C_nH_{2n-18}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4-(Cyclohexen-1′-yl)-biphenyl				
146–148[1]	190 1[1]			

References on Biphenyl with One Cyclenyl Substitution

1. von Braun, J., G. Irmisch, and J. Nelles, Ber. 66, 1471 1933.

3. BIPHENYL WITH TWO CYCLYL SUBSTITUTIONS, C_nH_{2n-18}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4,4′-Dicyclohexylbiphenyl				
205 205-206 [2] 205 [1,6,7] 202-203 [3,4] 202 [5]				

References on Biphenyl with Two Cyclyl Substitutions

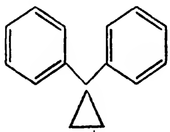
1. Basford, F. R., J. Chem. Soc. 1936, 1593.
2. Bodroux, D., Ann. chim. [10] 11, 511 1929.
3. Bodroux, D., and R. Thomassin, Bull. soc. chim. [5] 6, 1411 1939.
4. Bodroux, D., and R. Thomassin, Compt. rend. 205, 991 1937.
5. Buu-Hoï and P. Cagniant, Compt. rend. 216, 381 1943; C.A. 38, 2334 1944.
6. Hückel, W., K. Kumetat, and H. Severin, Ann. 518, 184 1935.
7. Neunhöffer, O., Ann. 526, 58 1936.

VII. TWO PHENYL SUBSTITUTIONS ON ALICYCLICS OR ALICYCLICALIPHATICS AND ALICYCLICDIPHENYL SUBSTITUTIONS ON ALIPHATICS

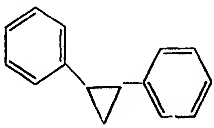
1. Two Phenyl Substitutions on Cyclanes or Two Phenyl and One Cyclyl Substitutions on Alkanes C_nH_{2n-16}
2. Two Phenyl Substitutions on Cyclenes, Two Phenyl and One Cyclylidene Substitutions on Alkanes, or Two Phenyl and One Cyclyl Substitutions on Alkenes C_nH_{2n-18}
3. Two Phenyl Substitutions on Bicyclanes C_nH_{2n-18}
4. Two Phenylalkyl Substitutions on Dicyclanes C_nH_{2n-18}
5. Two Cyclylphenyl or Two Cyclyl and Two Phenyl Substitutions on Alkanes C_nH_{2n-18}
6. Two Phenyl Substitutions on Cyclodienes C_nH_{2n-20}
7. Two Phenyl Substitutions on Alkenylcyclenes or Alkylidenecyclenes C_nH_{2n-20}
8. Two Phenyl Substitutions on Bicyclenes C_nH_{2n-20}
9. Two Phenyl Substitutions on Tricyclanes C_nH_{2n-20}
10. Two Phenyl Substitutions on Bicyclodienes C_nH_{2n-22}
11. Two Phenyl Substitutions on Tricyclylalkenes or Tricyclenes C_nH_{2n-22}
12. Two Phenyl and One Cyclodienylidene Substitutions on Alkanes C_nH_{2n-22}
13. Two Dicyclylphenyl Substitutions on Alkanes C_nH_{2n-22}

1. TWO PHENYL SUBSTITUTIONS ON CYCLANES OR TWO PHENYL AND ONE CYCLYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-16}

1,1-Diphenylcyclopropane

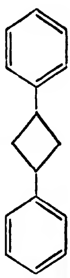


1,2-Diphenylcyclopropane



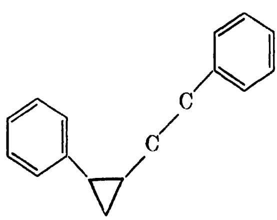
$C_{16}H_{16}$

1,3-Diphenylcyclobutane (a)



$C_{17}H_{18}$

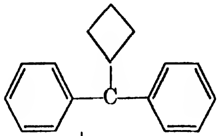
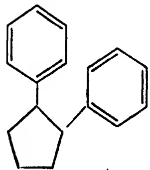
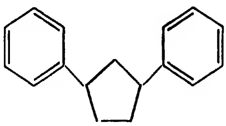
1-Phenyl-2-phenethylcyclopropane (a)



Compound	M. P.,°C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1,1-Diphenylcyclopropane		140	12[35]					
1,2-Diphenylcyclopropane		307.5	741[18]	1.0317[18]		1.5967[18]		
		164–166	13[22]	1.0316	21°[22]	1.5897	21°[22]	
		149	9.5[18]					
1,3-Diphenylcyclobutane (a)		157–158	8[28]					
1-Phenyl-2-phenethylcyclopropane (a)	65.5[19]	321.5	735[19]	0.9995	15°[19]	1.5666	15°[19]	
		204.5	28[19]	1.0063	15°[19]	1.5718	15°[19]	
		176	8[19]	1.0165	0°[19]			

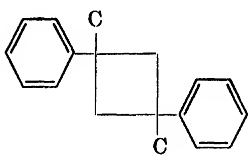
1,3-Diphenylcyclobutane: (a) This is the probable structure of the compound. The author has named it 1,3-Diphenyltetramethylene.

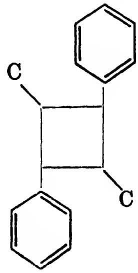
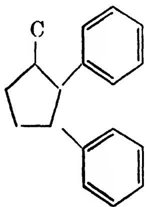
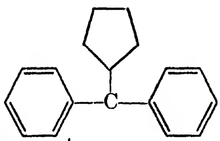
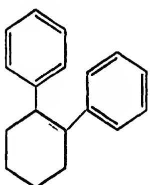
1-Phenyl-2-phenethylcyclopropane: (a) These values represent two preparations of the compound.

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Cyclobutyldiphenylmethane 				
39.5 [17]		1.0003 $D_0^{43.5}$ [17]	1.5636 43.5° [17]	
1,2-Diphenylcyclopentane 				
65(a) [34] 63(a) [2] 47(b)(c)	189 12 [13]			
1,3-Diphenylcyclopentane 				
	140–141 3 [6]	1.0196 25° [6]	1.5696 25° [6]	

(a) This constant was determined on the *cis* isomer.
(b) This constant was determined on the *trans* isomer.
(c) The melting point 47 is found in references 2, 10, 11, 13, 31, 32, 34.

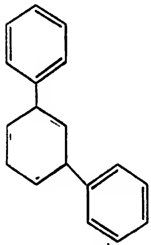
$C_{18}H_{20}$

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3-Dimethyl-1,3-diphenylcyclobutane 				
52 [27] 51–52 [30]	299–300 [30] 163–164 14–15 [30] 118–120 0.1 [27]	1.0038 [27] 1.1183 (solid) [27]	1.5633 [27]	

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3-Dimethyl-2,4-diphenylcyclobutane				
52.6 [7]	307.5 [7]	0.9904 D_{25}^{25} [7]	1.5660 25° [7]	
1-Methyl-2,3-diphenylcyclopentane				
62–63 [13,14]				
Cyclopentyldiphenylmethane				
32.5–33 [15,16] 32–33 [38]	126 15 [38]			
1,2-Diphenylcyclohexane 				
172 173 [9] 172 [38] 170–171 [20] 169–170 [1]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

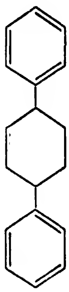
1,3-Diphenylcyclohexane



M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	196–198 17 [24]	1.0022(a) [24]		

(a) The temperature for this density is not given.

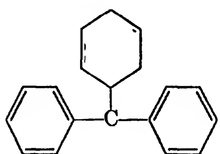
1,4-Diphenylcyclohexane



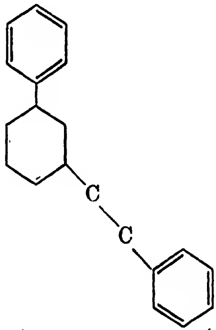
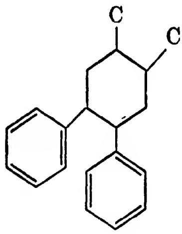
M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
170 [24]	190 29 [29]			

$C_{19}H_{22}$

Diphenylcyclohexylmethane

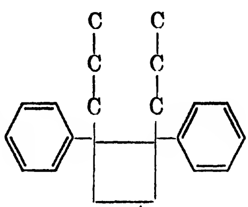


M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
58				
58.5 [4,5]	252–257 [1]	1.005 [1]	1.571 [1]	
56–57 [27]	156–158 0.25 [23]	1.029 8° [1]	1.575 [22]	
56.5 [26]		1.106 0° [36]	1.587 8° [1]	
56 [25]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-3-phenethylcyclohexane 				
	205-206 11[21]		1.55787[21] 1.55324 $n_{H\alpha}^{20}$[21] 1.56936 $n_{H\beta}^{20}$[21] 1.57944 $n_{H\gamma}^{20}$[21]	
1,2-Dimethyl-4,5-diphenylcyclohexane 				
97[8]	270[8]			
Cyclohexylphenethylbenzene (a)				
68-69[1]				

(a) The position of the cyclohexyl substitution is not given.

$C_{22}H_{28}$

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Di-*n*-propyl-1,2-diphenylcyclobutane 				
	208-212[3]	0.9601 23°[3]		

References on Two Phenyl Substitutions on Cyclanes or Two Phenyl and One Cyclyl Substitutions on Alkanes

1. Bodroux, D., Ann. chim. [10] **11**, 511 **1929**.
2. Burton, H., and C. W. Shoppee, J. Chem. Soc. **1939**, 567.
3. Dafert, F. W., Sitzber. Akad. Wiss. Wien, Math. naturw. Klasse **88**, Abt. II, 318 **1883**.
4. Danilov, S., J. Russ. Phys. Chem. Soc. **58**, 129 **1926**; Chem. Zentr. **1926**, II, 2298.
5. Danilov, S., and E. Venus-Danilova, Ber. **59**, 377 **1926**.
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7. Dreisbach, R. R., unpublished data.
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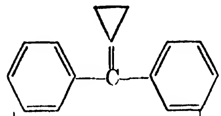
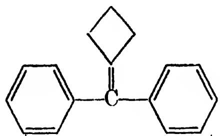
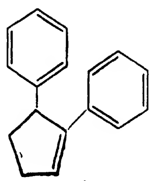
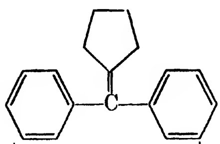
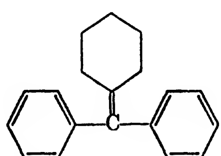
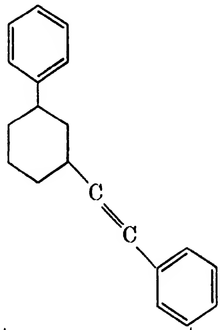
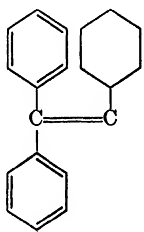
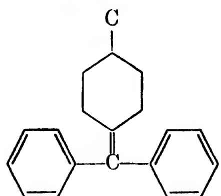
$C_{16}H_{14}$

2. TWO PHENYL SUBSTITUTIONS ON CYCLENES, TWO PHENYL AND ONE CYCLYLIDENE SUBSTITUTIONS ON ALKANES, OR TWO PHENYL AND ONE CYCLYL SUBSTITUTIONS ON ALKENES, C_nH_{2n-18}

M. P., °C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
Cyclopropylidenediphenylmethane 					
	110–114	0.5[7]			
$C_{17}H_{16}$					
Cyclobutylidenediphenylmethane 					
58[4]					
1,2-Diphenylcyclopentene-2 					
15–16[5]	321.5 184 177	747[5] 19[5] 13[5]	1.0355[5] 1.036[5]	1.5873[5] 1.5881[5]	
$C_{18}H_{18}$					
Cyclopentylidenediphenylmethane 					
62–63[10] 62–62.5[3]	183–185 180–181	9[3] 6–7[3]			
$C_{19}H_{20}$					
Cyclohexylidenediphenylmethane 					
84–85[1] 84[2] 83[3]					

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-3-phenethenylcyclohexane 				
	191–192 3.5[6]			
1,1-Diphenyl-2-cyclohexylethene 				
	210–215 15[9]			
Diphenyl-4-methylcyclohexylidenemethane 				
65[9]	200 12[9]			

References on Two Phenyl Substitutions on Cyclenes, Two Phenyl and One Cyclylidene Substitutions on Alkanes, or Two Phenyl and One Cyclyl Substitutions on Alkenes

1. Arbusov, A. J., and I. A. Arbusov, J. Gen. Chem. (U.S.S.R.) 2, 388 1932; C.A. 27, 974 1933.
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4. Kizhner, N., J. Russ. Phys. Chem. Soc. 42, 1227 1910; C.A. 6, 84 1912; Chem. Zentr. 1911, I, 544.
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6. Lebedev, S. V., and A. A. Ivanov, J. Russ. Phys. Chem. Soc. **48,** 997 **1916;** C.A. **11,** 787 **1917;** Chem. Zentr. **1923,** I, 1539.
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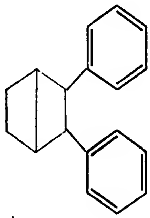
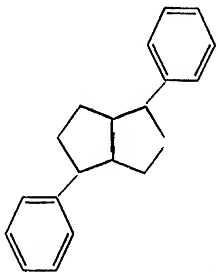
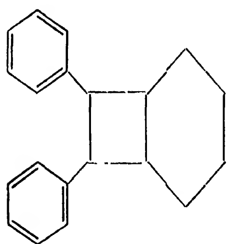
8. Schmidlin, J., and R. von Escher, Ber. **45,** 889 **1912.**
9. Skraup, S., and E. Schwamberger, Ann. **462,** 135 **1928.**
10. Ziegler, K., A. Seib, F. Knövenagel, P. Herte, and F. Andreas, Ann. **551,** 150 **1942;** C.A. **37,** 5388 **1943.**

3. TWO PHENYL SUBSTITUTIONS ON BICYCLANES, C_nH_{2n-18}

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,3-Diphenylbicyclo-[2,2,0]-hexane 				
56[1]	212–215 12[1]			
$C_{20}H_{22}$				
2,6-Diphenylbicyclo-[3,3,0]-octane 				
110–112[3]				
7,8-Diphenylbicyclo-[4,2,0]-octane (a) 				
89–90[2]				

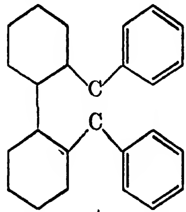
(a) The author states that the compound is either this or the preceding one. Because the data does not agree, it is assumed to have this structure.

References on Two Phenyl Substitutions on Bicyclanes

1. Döbner, O., and G. Schmidt, Ber. 40, 148 1907.
2. Fichter, F., and K. Kestenhalz, Helv. Chim. Acta 25, 785 1942.
3. Wawzonek, L., J. Am. Chem. Soc. 65, 839 1943.

4. TWO PHENYLALKYL SUBSTITUTIONS ON DICYCLANES, C_nH_{2n-18}

2,2′-Dibenzyldicyclohexane

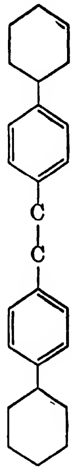
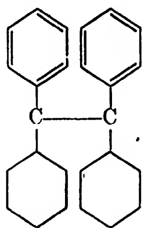


M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
180–181[1]				

References on Two Phenylalkyl Substitutions on Dicyclanes

1. Cook, J. W., C. L. Hewett, and C. A. Lawrence, J. Chem. Soc. 1936, 71.

5. TWO CYCLYLPHENYL OR TWO CYCLYL AND TWO PHENYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-18}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Di-1,2-*p*-cyclohexylphenylethane				
148–149 [1,2]				
1,2-Dicyclohexyl-1,2-diphenylethane				
198–200 [3]				

References on Two Cyclylphenyl or Two Cyclyl and Two Phenyl Substitutions on Alkanes

1. Bodroux, D., and R. Thomassin, Bull. soc. chim. [5] 6, 1411 1939.
2. Bodroux, D., and R. Thomassin, Compt. rend. 205, 1417 1937.
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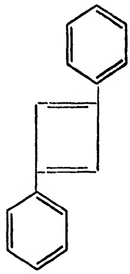
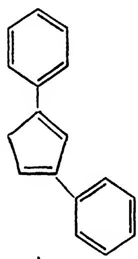
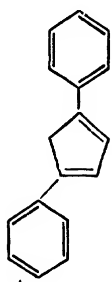
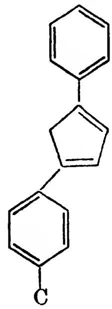
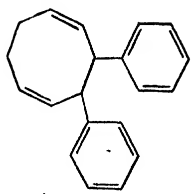
6. TWO PHENYL SUBSTITUTIONS ON CYCLODIENES, C_nH_{2n-20}

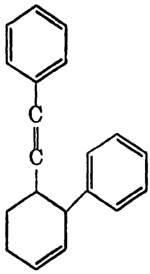
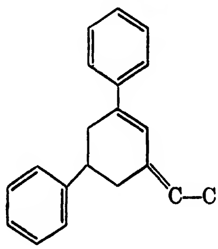
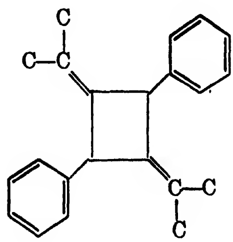
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,4-Diphenylcyclobutadiene-1,3				
130 [5]				
$C_{17}H_{14}$				
1,3-Diphenylcyclopentadiene-1,3				
156 [1]				
1,4-Diphenylcyclopentadiene-1,3				
158–158.5 [4]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-4-*p*-tolylcyclopentadiene-1,3 				
153–153.5[4]				
$C_{20}H_{20}$ Dimethyldiphenylcyclohexadiene (a)				
	205 10[6]			
(a) The structure of this compound is not given.				
3,4-Diphenylcyclooctadiene-1,5 				
	204–206 10[3] 204–205 10[2]	1.018 15.3°[2]		

References on Two Phenyl Substitutions on Cyclodienes

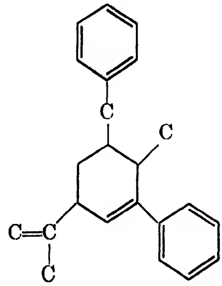
1. Borsche, W., and W. Menz, Ber. **41,** 190 1908.
2. Döbner, O., Ber. **35,** 2129 1902.
3. Döbner, O., and H. Staudinger, Ber. **36,** 4318 1903.
4. Drake, N. L., and J. R. Adams, J. Am. Chem. Soc. **61,** 1326 1939.
5. Gastaldi, C., and F. Cherchi, Gazz. chim. ital. **44,** I, 283 1914.
6. von der Heide, C., Ber. **37,** 2101 1904.

7. TWO PHENYL SUBSTITUTIONS ON ALKENYLCYCLENES OR ALKYLIDENECYCLENES, C_nH_{2n-20}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenethenyl-2-phenylcyclohexene-3 				
	210–212 12[1]			
1,5-Diphenyl-3-ethylidenecyclohexene-1 				
	152 22[3]			
$C_{22}H_{24}$				
1,3-Diisopropylidene-2,4-diphenylcyclobutane 				
	202 11[4]			

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1-Benzyl-2-methyl-3-phenyl-5-isopropenylcyclohexene-3

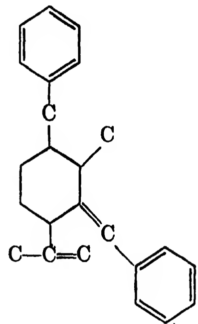


M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	234–237 13[3]			$[\alpha]_D^{20}=$ −73.51°[3] (a)

(a) Angles of rotation for lines other than D are given in reference 3.

$C_{24}H_{28}$

1-Benzyl-2-methyl-3-benzylidene-4-isopropenylcyclohexane



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	232–235 11[3]	1.0015[3]	1.58159[3]	$[\alpha]_D^{20}=$ +7.42°[3] (a)

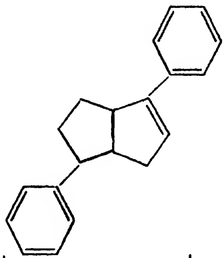
(a) Angles of rotation for lines other than D are given in reference 3.

References on Two Phenyl Substitutions on Alkenylcyclenes or Alkylidenecyclenes

1. Bergmann, E., J. Chem. Soc. 1935, 1359.
2. Kohler, E. P., Am. Chem. J. 37, 369 1907.
3. Rupe, H., and W. Tomi, Ber. 47, 3064 1914.
4. Störmer, R., and H. Strok, Ber. 68, 2102 1935.

8. TWO PHENYL SUBSTITUTIONS ON BICYCLENES, C_nH_{2n-20}

2,6-Diphenylbicyclo-[3,3,0]-octene-2



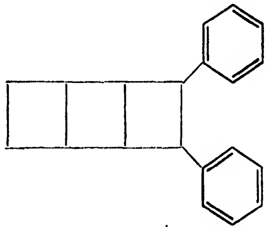
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
115–116[1]				

References on Two Phenyl Substitutions on Bicyclenes

1. Wawzonek, S., J. Am. Chem. Soc. 65, 839 1943.

9. TWO PHENYL SUBSTITUTIONS ON TRICYCLANES, C_nH_{2n-20}

3,4-Diphenyltricyclo-[4,2,0,$0^{2,5}$]-octane

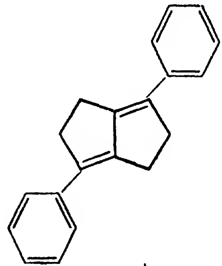
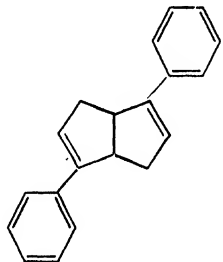


M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	204–206 12[1]			

References on Two Phenyl Substitutions on Tricyclanes

1. Döbner, O., and G. Schmidt, Ber. 40, 148 1907.

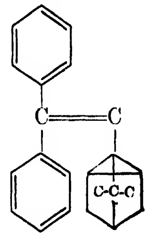
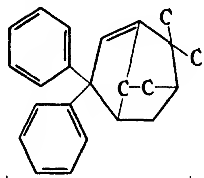
10. TWO PHENYL SUBSTITUTIONS ON BICYCLODIENES, C_nH_{2n-22}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,6-Diphenylbicyclo-[3,3,0]-octadiene-1,5 				
188–190[1]				
2,6-Diphenylbicyclo-[3,3,0]-octadiene-2,6 				
136–138[1]				

References on Two Phenyl Substitutions on Bicyclodienes

1. Wawzonek, S., J. Am. Chem. Soc. 65, 839 1943.

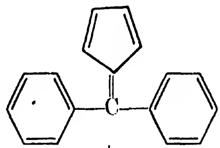
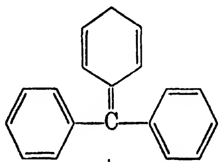
11. TWO PHENYL SUBSTITUTIONS ON TRICYCLYLALKENES OR TRICYCLENES, C_nH_{2n-22}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenyl-2-(7′,7′-dimethyltricyclo-[2,2,1,0$^{2',6'}$]-heptanyl)-ethene				
71[1] 70–71[2]	154 0.06[1]			
2,2-Dimethyl-6,6-diphenyltricyclo-[3,2,1,1^{3,8}]-nonene-7				
83–84[2]				

References on Two Phenyl Substitutions on Tricyclylalkenes or Tricyclenes

1. Asahina, Y., and T. Sano, Ber. 73, 747 1940.
2. Lipp, P., and M. Quadvlieg, Ber. 62, 2311 1929.

12. TWO PHENYL AND ONE CYCLODIENYLIDENE SUBSTITUTIONS ON ALKANES, C_nH_{2n-22}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Cyclopentadien-2,4-ylidenediphenylmethane (Diphenylfulvene) 				
82[1,3,4,5]				
$C_{19}H_{16}$				
Cyclohexadien-2,5-ylidenediphenylmethane 				
81[2,6]				

References on Two Phenyl and One Cyclodienylidene Substitutions on Alkanes

1. Courtot, C., Ann. chim. [9] 4, 168 1915.
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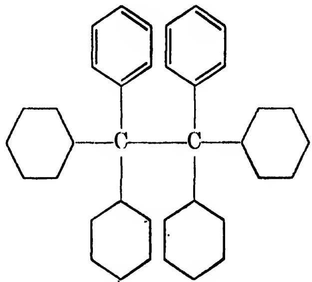
13. TWO DICYCLYLPHENYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-22}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2,2-Tetracyclohexyl-1,2-diphenylethane 				
	170–171 1.75[1]		1.6710 23°[1]	
Tetracyclohexyldiphenylethane (a)				
157–158(in N_2)[2]				

(a) The structure of this compound is not given.

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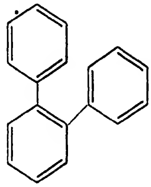
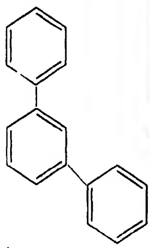
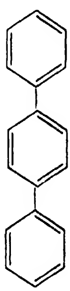
VIII. TERPHENYLS AND THEIR ALIPHATIC DERIVATIVES

1. Terphenyls and Their Alkyl Derivatives C_nH_{2n-22}

1. TERPHENYLS AND THEIR ALKYL DERIVATIVES, C_nH_{2n-22}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Diphenylbenzene 				
57				
58[56] 57[6,21] 56–57[12] 55[50]	332[6,21] 20.0 <0.02[45]			
1,3-Diphenylbenzene 				
87	**364**			
89[29,34,69] 87[6,19,37,53,56] 85(a) 84–85[20,51]	365[6] 364[4] 363[60] 360[61] 369 766[20]			
1,4-Diphenylbenzene (Terphenyl) 				
210	**383**			
214[4] 213[6,9,10] 212–213[17,18] 211.5–212.5[42]	385[4] 383[22,60,63] 376[6] 250 45[60]	1.234[71] 1.226(b) (solid)[41]		

(a) The melting point 85 is found in references 2, 3, 4, 13, 16, 49, 60, 61, 70.

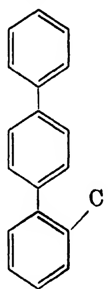
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Diphenylbenzene *(Continued)*				
212 [16,27,34]				
211–212 [65]				
211.5 [56]				
210–211.5 [5]				
211 [46,55]				
210–211 [47]				
210 [51,52,53]				
209–210 [35,43,44]				
209.5 [32]				
209 [57,66,68,69]				
208 [24,25,33]				
207 [14]				
206 [8,15,31,38,39,40]				
205–206 [59]				
205(a)				

(a) The melting point 205 is found in references 1, 2, 3, 7, 11, 13, 23, 26, 30, 38, 48, 49, 58, 60, 61, 62, 63, 64, 70.

(b) The temperature for this density is not given.

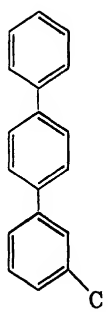
$C_{19}H_{16}$

1-Phenyl-4-*o*-tolylbenzene

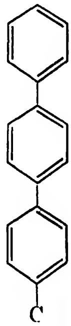
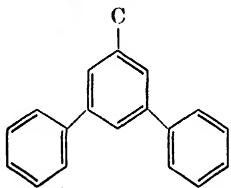
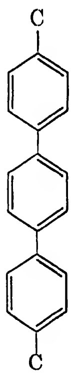
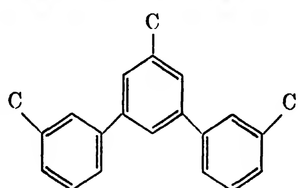


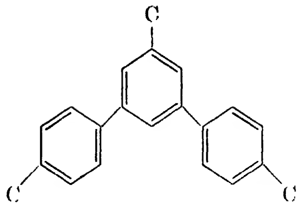
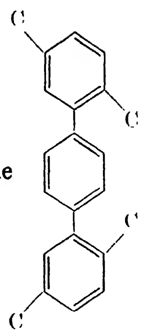
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
91–92 [5,28]				

1-Phenyl-4-*m*-tolylbenzene



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
169–170 [28]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-4-*p*-tolybenzene 				
207–208 [28] 206–208 [69]				
1-Methyl-3,5-diphenylbenzene 				
130 [19]				
$C_{20}H_{18}$				
1,4-Di-*p*-tolylbenzene 				
249–250 [36]				
$C_{21}H_{20}$				
1-Methyl-3,5-di-*m*-tolylbenzene 				
65 [16]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Methyl-3,5-di-*p*-tolylbenzene 				
117[19]				
$C_{22}H_{22}$ **Diethylterphenyl** (a)				
280[67]				
(a) The structure of this compound is not given.				
1,4-(Di-2′,5′-dimethylphenyl)-benzene 				
112–113[28]				

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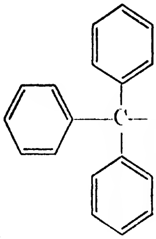
IX. THREE PHENYL OR ONE PHENYL AND ONE BIPHENYLYL SUBSTITUTIONS ON ALIPHATICS

1. Triphenylalkyl Radicals
2. Three Phenyl or One Phenyl and One Biphenylyl Substitutions on Alkanes, or Two Phenylalkyl Substitutions on Benzene C_nH_{2n-22}
3. Three Phenyl or One Phenyl and One Biphenylyl Substitutions on Alkenes C_nH_{2n-24}
4. Three Phenyl Substitutions on Alkynes C_nH_{2n-26}
5. Three Phenyl Substitutions on Alkadienes or Two Phenylalkenyl Substitutions on Benzene C_nH_{2n-26}
6. Three Phenyl Substitutions on Alkenynes C_nH_{2n-28}
7. Three Phenyl Substitutions on Alkatrienes C_nH_{2n-28}

1. TRIPHENYLALKYL RADICALS

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Triphenylmethyl				
145-147[1,2]				

References on Triphenylalkyl Radicals

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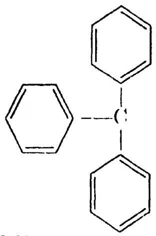
2. THREE PHENYL OR ONE PHENYL AND ONE BIPHENYLYL SUBSTITUTIONS ON ALKANES, OR TWO PHENYLALKYL SUBSTITUTIONS ON BENZENE, C_nH_{2n-22}

Triphenylmethane



M. P., °C		B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
92.6		**360**		**1.0134**	**100°**			Sublimation Temp., °C
96[81]		360.7[72]		0.954	180°[103]	1.558	180°[103]	
95[28,43,71]		358–360[5,73,112]		0.969	160°[103]	1.568	160°[103]	200[47]
94–95[59,119,120,121,122]		359[68,74]		0.983	140°[103]	1.5775	140°[103]	
94[33,41,42]		358[65,130]		0.996	120°[103]	1.5865	120°[103]	
93.5–94[16]		357	758[80]	1.0081	106.5°[36]	1.595	100°[103]	
93–94[136,137]		307.5	250[72]	1.0155	100.5°[128]	1.50746	18.4°[6]	
93.4[80]		306.0	250[94]	1.009	100°[103]	1.57879	$n_{H\alpha}^{106.5}$[36]	
93.2[87]		266.2	100[72]	1.0195	100°[73]	1.57883	$n_{H\alpha}^{100.5}$[128]	
93–93.2[123]		239	47[51]	1.0570	D_{100}^{100}[94]	1.57776	$n_{H\alpha}^{99.0}$[94]	
93(a)		132	0[68]	1.01405	99.0°[94,128]	1.57779	$n_{H\alpha}^{99.0}$[128]	
92.5–93[92,116]				1.0029	96.78°[20]	1.50266	$n_{H\alpha}^{18.4}$[6]	
92–93(b)				1.0032	95.09°[20]	1.60208	$n_{H\beta}^{106.5}$[36]	
92.81[20]				1.0191	95°[73]	1.60079	$n_{H\beta}^{100.5}$[128]	
92.8[75,88]				1.0568	D_{95}^{95}[94]	1.59965	$n_{H\beta}^{99.0}$[94,128]	
92.6[70]				1.0049	91.98°[20]	1.61364	$n_{H\gamma}^{99.0}$[94,128]	
92.5(c)				1.0078	87.64°[20]	1.58516	$n_{He}^{100.5}$[128]	
92.2–92.5[3]				1.0097	83.95°[20]		(g)	
92–92.5[61]				1.0114	80.86°[20]			
92.3[58]				1.0130	77.75°[20]			
92.2[12]				1.0150	74.41°[20]			
92.1 ± 0.1[31]				1.1106	37.34° (solid)[20]			
92.1[93,118]				1.1169	22.04° (solid)[20]			
92(d)				1.1210	12.85° (solid)[20]			
91–92[19]				1.147	0° (solid)[139]			
91.9[28]				1.148	0° (solid)[139]			
91–91.5[84]				1.135(f)[13]				
91(e)								
	atm.							
176.8	2,904[35]							
170.6	2,629[35]							
170	2,601[35]							
165.8	2,420[35]							
160	2,181[35]							
153.9	1,936[35]							
153.6	1,926[35]							
150	1,795[35]							
140.3	1,452[35]							
140	1,445[35]							

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Triphenylmethane (*Continued*)				*
136.2 1,318[35]				
130 1,111[35]				
125.7 968[35]				
120.3 803[35]				†
120 794[35]				
110 489[35]				
109.7 484[35]				
102.0 262[35]				
100 208[35]				

* $t_m = 92.58 + 0.03672 p_{atm} - 0.000002662 p_{atm}^2$ (1 to 2,904 atm)

† $\frac{dD}{dt} = -0.0007457/°C$ (95 to 180°C)

(a) The melting point 93 is found in references 6, 15, 22, 32, 38, 39, 75, 86, 97, 99, 101, 102, 112, 114, 124, 129, 131.
(b) The melting point 92-93 is found in references 1, 4, 10, 17, 18, 21, 25, 30, 34, 49, 57, 73, 116, 117, 133, 140.
(c) The melting point 92.5 is found in references 5, 26, 60, 63, 95, 100, 108, 111, 113.
(d) The melting point 92 is found in references 2, 5, 7, 8, 9, 11, 14, 24, 27, 29, 37, 40, 44, 45, 46, 47, 48, 50, 52, 53, 54, 55, 56, 62, 64, 66, 67, 76, 77, 79, 82, 83, 85, 89, 90, 91, 96, 98, 104, 105, 106, 110, 125, 127, 130, 132, 135, 138.
(e) The melting point 91 is found in references 23, 69, 78, 107, 109, 126, 134.
(f) The temperature for this density is not given.
(g) Refractive indices at other lines may be found in reference 94.

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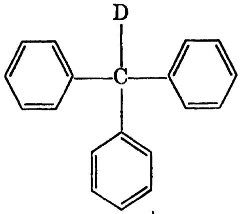
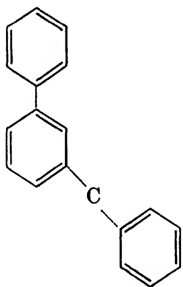
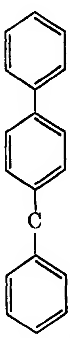
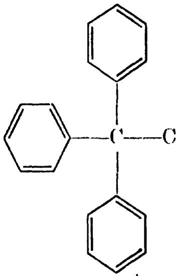
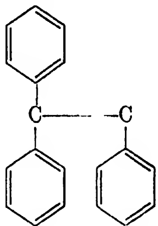
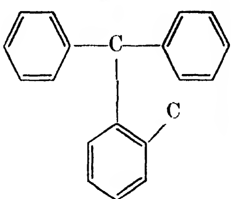
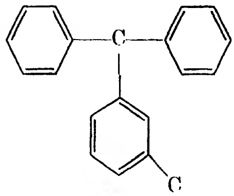
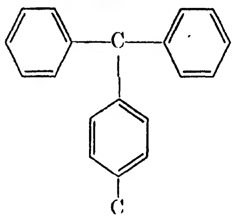
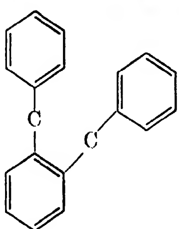
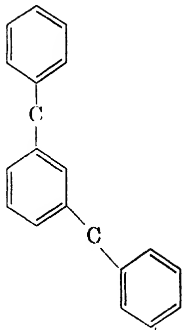
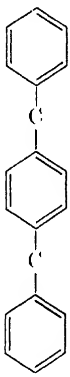
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Triphenylmethane-d 				
92[17] 91-92[17]				
1-Phenyl-3-benzylbenzene (a) 				
54[27]	283-287 650[27]			

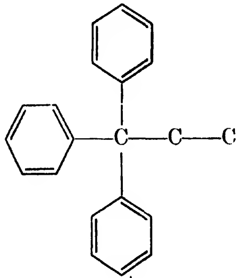
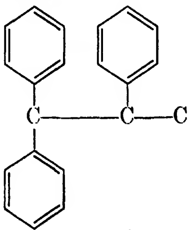
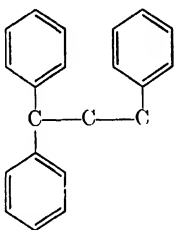
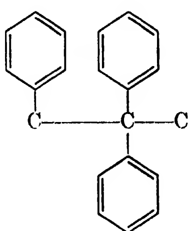
(a) This compound was named isobenzyldiphenyl and is probably 1-phenyl-3-benzylbenzene.

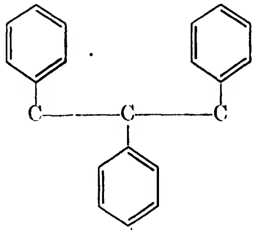
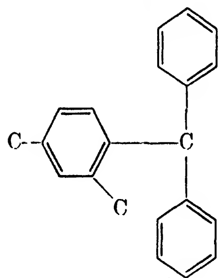
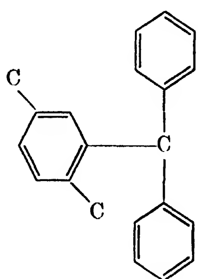
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-4-benzylbenzene 				
85[11,27,49]	285-286 650[27]	1.171 0°[81]		

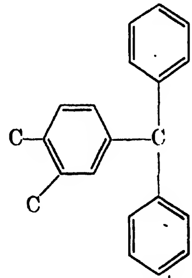
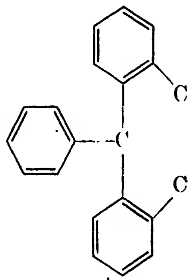
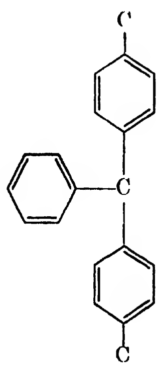
M. P., °C	B. P.,°C @ 760mm		D_4^{20}	n_D^{20}	Additional Data
1,1,1-Triphenylethane 					
95[60,74,77]	220–226	25[30]			
94–95[29,63]					
1,1,2-Triphenylethane 					
55					
56[58]	356[61]				
54–55[80]	348–349	751[39]			
54.5[14]	216–217	14[39]			
53.5–54.5[7,78]	211	14[6]			
54[21,39,52]	209–211	12[80]			
53[51]	206–210	12[2]			
52–53[2]					
Diphenyl-*o*-tolylmethane 					
82					
82–83[10]	354	706[10]			
81–83[3]					
82[41]					
80[1]					

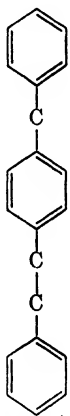
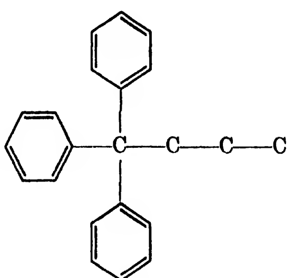
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Diphenyl-*m*-tolylmethane 				
60.3				
62[1,33]	353–354.7 774[55]	1.0072 90°[15]	1.58264 90°[15]	
61–62[25]			1.57666 $n_{H\alpha}^{90}$ [15]	
60.5–61.5[10,25]			1.59824 $n_{H\beta}^{90}$ [15]	
60.2[15]				
59.5[55]				
59–59.5[24]				
Diphenyl-*p*-tolylmethane 				
72				
74[A]				
72[12,13,31,41]				
71[24,34]				
69–70[9]				
1,2-Dibenzylbenzene 				
78[8,14,27,53]				
67–68[62]				

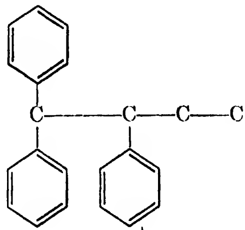
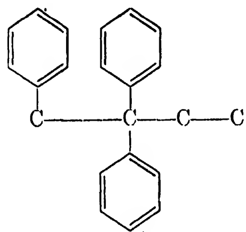
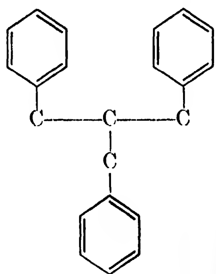
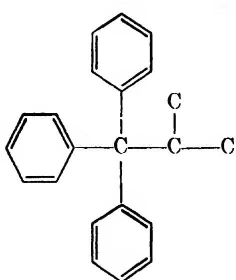
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3-Dibenzylbenzene 				
59 [38] 58-59 [64]	229-231 14 [56]	1.0535 D_0^{20} [56] 1.0663 D_0^0 [56]		
1,4-Dibenzylbenzene 				
86 87-87.5 [56] 87 [48] 85-87 [53] 86 [38] 85-86 [37,64] 84-85 [45] 84 [50] 83-84 [67] 83 [16]	252-255 20 [37]			

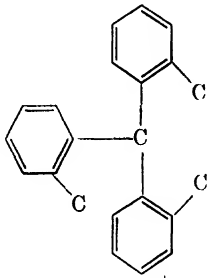
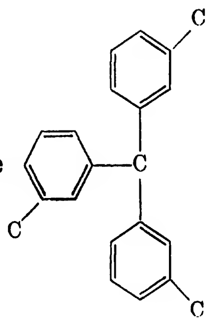
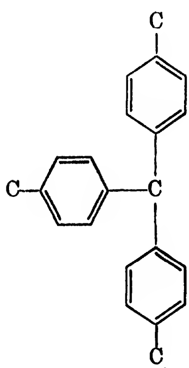
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1-Triphenylpropane 				
51 [30]	248–249 41 [30]			
1,1,2-Triphenylpropane 				
76 [5] 73–75 [58]	365 [20] 220 16 [5]			
1,1,3-Triphenylpropane 				
47 [5] 46–47 [82,83] 46 [78]	225 21 [5]			
1,2,2-Triphenylpropane 				
118–119 [84] 116–117 [85]				

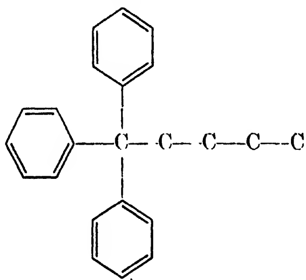
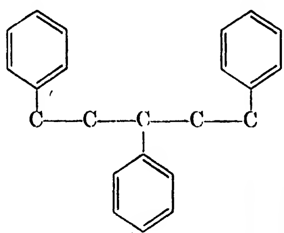
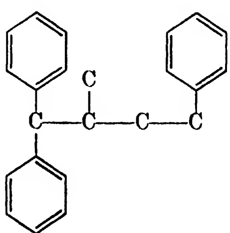
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,3-Triphenylpropane 				
	340[18] 225–230 10[26,63] 179–181 2[26]	1.0482 18°[26]	1.6042 23°[26]	
Diphenyl-2,4-dimethylphenylmethane 				
61.5[34]				
Diphenyl-2,5-dimethylphenylmethane 				
92[33]				

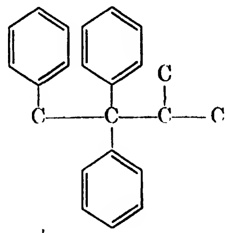
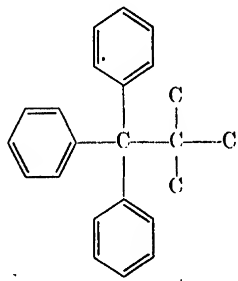
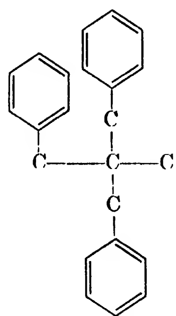
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Diphenyl-3,4-dimethylphenylmethane 				
68.5[34]				
Phenyldi-*o*-tolylmethane 				
106[16] 104[73] 102–104[3]	286–289 12[16] 180–185 12[73] 64 2[16]			
Phenyldi-*p*-tolylmethane 				
54 55–56[68] 54–54.5[40] 53[71] 52[31,41]	218–220 12[16] 193 3[16]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Methyldibenzylbenzene (a)				
	214–217 4 [35]	1.0413 [35]	1.5991 [35]	
(a) The structure of this compound is not given.				
Benzyltolylbenzene (a)				
	392–396 [73]	1.049(b) [73]		
(a) The structure of this compound is not given. (b) The temperature for this density is not given.				
1-Benzyl-4-phenethylbenzene 				
	225–230 10 [26] 213–216 5 [26]	1.0394 18° [26]	1.5929 23° [26]	
$C_{22}H_{22}$				
1,1,1-Triphenylbutane 				
79 [30]	262–265 62 [30]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2-Triphenylbutane 				
77–78[22]				
1,2,2-Triphenylbutane 				
79–79.5[79]				
1,3-Diphenyl-2-benzylpropane 				
81.8–82[38]				
1,1,1-Triphenyl-2-methylpropane 				
	233–234 21[30]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tri-*o*-tolylmethane				
130.5–131.5 [3]				
Tri-*m*-tolylmethane				
73 [55]	376–377.3 767 [55]			
Tri-*p*-tolylmethane				
63.5 [28] 57 [44] 53–54 [47]	260–262 28 [69] 232 11 [3]			

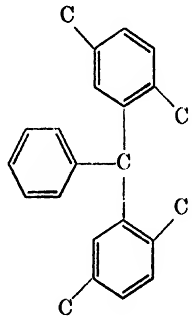
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
***p*-Dimethyltriphenyldimethane** (a)				
83.5 [19]				
(a) The structure of this compound is not given.				
Benzyl-(phenylxylyl)-methane (a)				
	240–245 14 [16]			
(a) The structure of this compound is not given.				
$C_{23}H_{24}$				
1,1,1-Triphenylpentane 				
153–154 [48]				
1,3,5-Triphenylpentane 				
	170–172 0.5 [65]	1.0180 25° [54]	1.5770 25° [54]	
1,1,4-Triphenyl-2-methylbutane 				
69 [59]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,2-Triphenyl-3-methylbutane 				
80[59]	225–227 20[59]			
1,1,1-Triphenyl-2,2-dimethylpropane 				
189.5[75] 185[82]				
1-Phenyl-2,2-dibenzylpropane 				
113[70]				
Benzylphenyl-2,4,6-trimethylphenylmethane (a)				
76[16]				

(a) The structure of this compound is questionable.

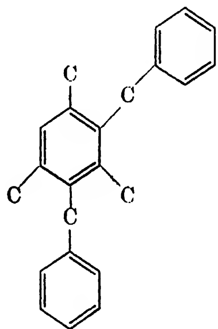
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

Phenyl-di-2,5-dimethylphenylmethane



92.5 [23]				

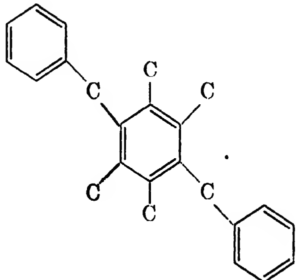
1,3,5-Trimethyl-2,4-dibenzylbenzene



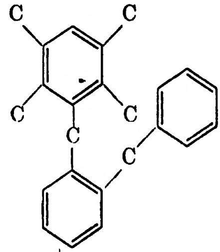
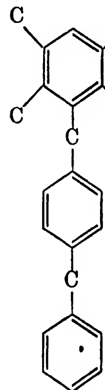
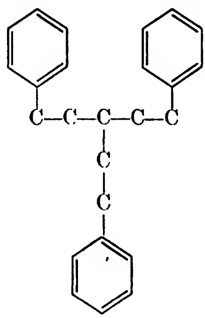
131 [42] 89 [46]				

$C_{24}H_{26}$

1,2,4,5-Tetramethyl-3,6-dibenzylbenzene

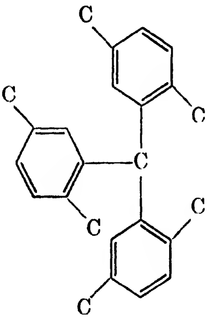
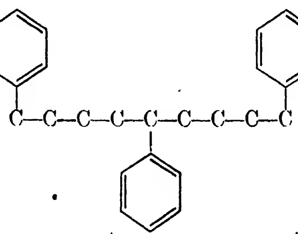


176–177 [26A]	495 [4]			

M. P., °C	B. P., °C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
2,3,5,6-Tetramethyl-2'-benzyldiphenylmethane 							
126.5–127.5 [26A]							
2,3,5,6-Tetramethyl-4'-benzyldiphenylmethane 							
69–70 [26A]							
$C_{25}H_{28}$							*
1,5-Diphenyl-3-phenethylpentane 							
			1.0086		1.5725		†
−32 [57]	209.5	1.00 [57]	1.0087 [57]		1.5725 [57]		
	195.0	0.50 [57]	0.9537	98.9° [57]	1.5644	40.0° [57]	
			0.9801	60° [57]	1.5685	30.0° [57]	
			0.9952	37.8° [57]			

* $\frac{dD}{dt} = -0.0007407[1-0.0001579(t-20)]/°C$ (20 to 99°C)

† $\frac{dn}{dt} = -0.0004035/°C$ (20 to 40°C)

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tri-2,5-dimethylphenylmethane 				
188[23]				
$C_{27}H_{32}$				
1,5,9-Triphenylnonane 				
	216-218 0.04[54]	0.9955 25°[54]	1.5580 25°[54]	

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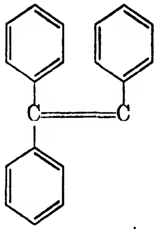
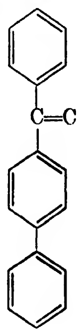
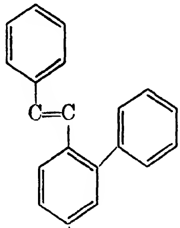
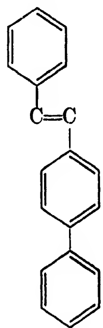
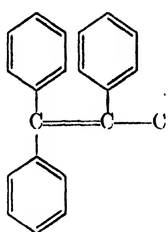
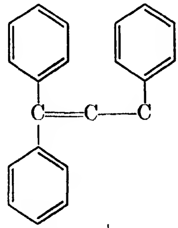
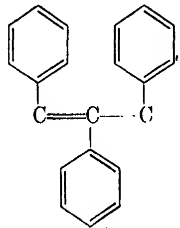
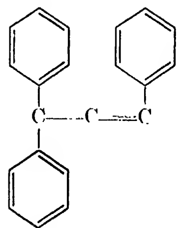
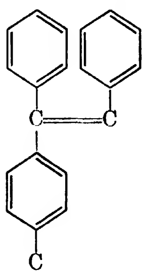
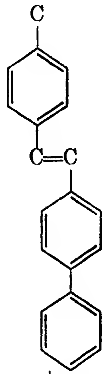
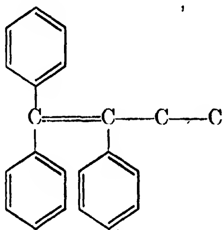
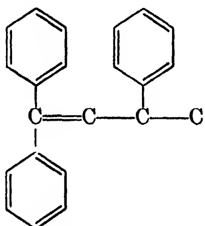
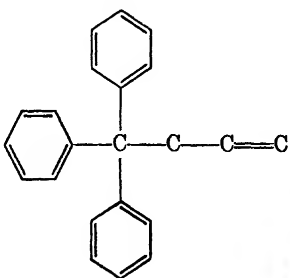
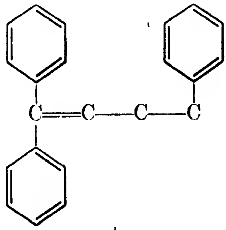
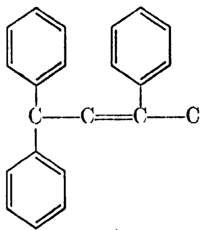
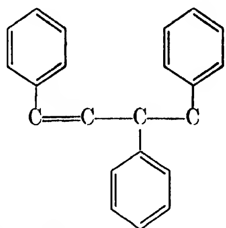
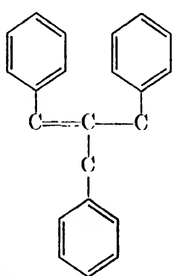
3. THREE PHENYL OR ONE PHENYL AND ONE BIPHENYLYL SUBSTITUTIONS ON ALKENES, C_nH_{2n-24}

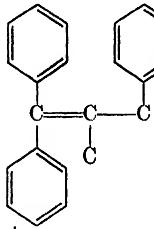
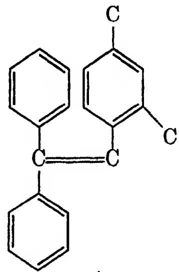
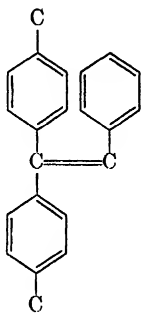
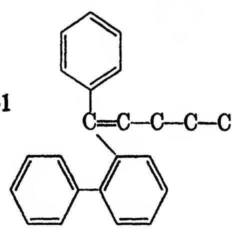
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2-Triphenylethene 				*
70		**1.0757**		
72–73[42]	219–221 15[47]	1.0373 78.4°[47]	1.66784 25°[25]	
72[25,43]	220–221 14[17]	1.0649 35°[25]	1.62918 $n_{H\alpha}^{78.4}$ [47]	
70–71[14,26]		1.0684 30°[25]	1.65698 $n_{H\alpha}^{25}$ [25]	
70–70.5[15]		1.0712 26°[25]	1.66798 $n_{H\beta}^{78.4}$ [47]	
70[21,22]		1.0719 25°[25]	1.69840 $n_{H\beta}^{25}$ [25]	
69[41]		1.0726 24.5°[25]	1.64012 $n_{He}^{78.4}$ [47]	
68–69[1,13]		1.0750 21°[25]		
67–69[47]		1.0765 19°[25]		
68[27,44]		1.0793 15°[25]		
67–68[12]		1.0813 12°[25]		
66–68[18]				
* $\frac{dD}{dt} = -0.0007200/°C$ (12 to 35°C)				
1-Phenyl-1-*p*-biphenylylethene 				
95				
96[40]				
94–95[32]				
94[40]				
93[9]				

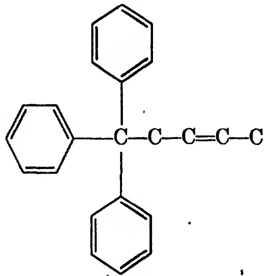
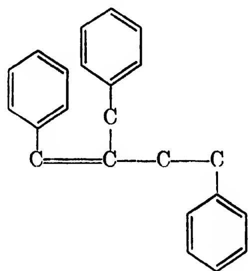
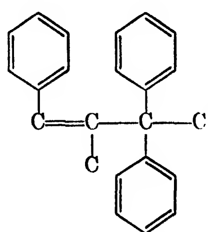
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Phenyl-2-*o*-biphenylethene 				
59–61 [7] 55–56 [8]	201–202.5 12 [7]			
1-Phenyl-2-*p*-biphenylylethene 				
220.5–221.5 [20]				
$C_{21}H_{18}$ **1,1,2-Triphenylpropene-1** 				
92–93 [39] 89–90 [23,24]		0.9956 100.2° [47]	1.58414 $n_{H\alpha}^{100.2}$ [47] 1.61146 $n_{H\beta}^{100.2}$ [47] 1.59253 $n_{H\epsilon}^{100.2}$ [47]	

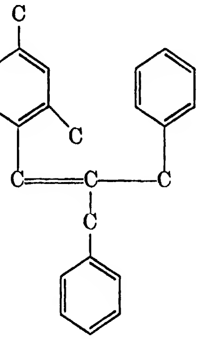
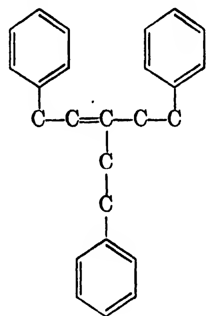
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,3-Triphenylpropene-1 				
89[36,37] 87–89[31]	229–230 17[29] 225–227 16[3] 228–229 15[21] 222 10[39]			
1,2,3-Triphenylpropene-1 				
63–64[37] 63[5,36] 62–63[28]	224 12[5]			
1,1,3-Triphenylpropene-2 				
97–98[50]	230 15[50] 180 0.2[50]			
1,2-Diphenyl-1-*p*-tolylethene 				
	245–250 27[19]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-*p*-Tolyl-2-*p*-biphenylylethene 				
102–103[3]				
$C_{22}H_{20}$				
1,1,2-Triphenylbutene-1 				
80–81[10]				
1,1,3-Triphenylbutene-1 				
	244 33[51]			
1,1,1-Triphenylbutene-3 				
69.5–70.5[9]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,4-Triphenylbutene-1 				
122–124[48] 122–123[16]				
1,1,3-Triphenylbutene-2 				
	234 12[51]			
1,3,4-Triphenylbutene-1 				
	240–242 40[4]			
1,3-Diphenyl-2-benzylpropene-1 				
29–30[45,46]	241–245 20[45] 245–246 18[5] 231–232 11[29,45]			

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,3-Triphenyl-2-methylpropene-1 				
70–71[6]				
1,1-Diphenyl-2-(2′,4′-dimethylphenyl)-ethene 				
69–70[11]				
1,1-Di-*p*-tolyl-2-phenylethene 				
	258–259 24[19]			
$C_{23}H_{22}$ 1-Phenyl-1-(2′-*o*-biphenylyl)-pentene-1 				
78–79[8]	207–208[8]			

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1-Triphenylpentene-3 				
83(a)[49] 124(b)[49]				
(a) This constant was determined on the *cis* isomer. (b) This constant was determined on the *trans* isomer.				
1,4-Diphenyl-2-benzylbutene-1 				
57–58[30]	245–247 22[30]			
1,3,3-Triphenyl-2-methylbutene-1 				
110(a)[33,34,35] 90(a)[33,34]				
(a) These melting points represent two stereoisomers.				

Compound	M. P., °C	B. P.,°C @ 760mm		D_4^{20}		n_D^{20}		Additional Data
1-(2′,4′-Dimethylphenyl)-2-benzyl-3-phenylpropene-1 		246	13[11]	1.028	24°[11]	1.600	24°[11]	
$C_{25}H_{26}$ 1,5-Diphenyl-3-phenethylpentene-2 				1.0159		1.5816		* †
		210.5	1.00[38]	1.0159[38]		1.5816[38]		
		195.5	0.50[38]	0.9611	98.9°[38]	1.5735	40.0°[38]	
				0.9880	60°[38]	1.5775	30.0°[38]	
				1.0029	37.8°[38]			
				1.0304	0°[38]			

* $\frac{dD}{dt} = -0.0007166[1-0.0008158(t-20)]/°C$ (0 to 99°C)

† $\frac{dn}{dt} = -0.000405/°C$ (20 to 40°C)

References on Three Phenyl or One Phenyl and One Biphenylyl Substitutions on Alkenes

1. Adkins, H., and W. Zartman, Org. Syntheses 17, 89 1937.
2. Bachmann, W. E., and R. F. Cockerill, J. Am. Chem. Soc. 55, 2932 1933.
3. Bergmann, E., and A. Bondi, Ber. 64, 1455 1931.
4. Bergmann, E., and T. Ukai, Ber. 66, 54 1933.
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8. Bradsher, C. K., and S. T. Amore, J. Am. Chem. Soc. 66, 1280 1944.
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15. Kazanskiĭ, B. A., and G. T. Tatevosyan, J. Gen. Chem. (U.S.S.R.) 9, 1458 1939.
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26. Ley, Z. wiss. Phot. 18, 177 1918.
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32. Pfeiffer, P., and P. Schneider, J. prakt. Chem. [2] 129, 129 1931.
33. Ramart, P., Bull. soc. chim. [4] 35, 1075 1924.
34. Ramart, P., Compt. rend. 179, 400 1924.
35. Ramart, P., Compt. rend. 179, 634 1924.
36. Ramart, P., and P. Amagat, Ann. chim. [10] 8, 263 1927.
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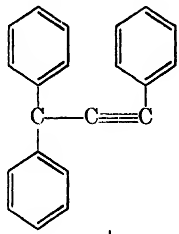
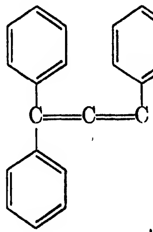
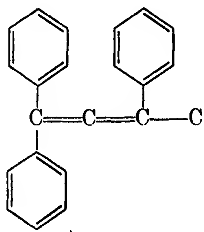
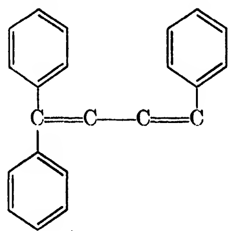
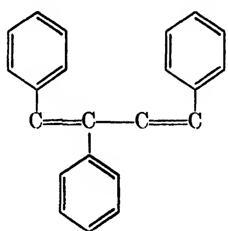
4. THREE PHENYL SUBSTITUTIONS ON ALKYNES, C_nH_{2n-26}

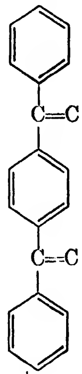
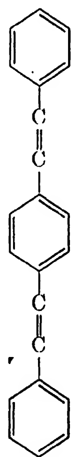
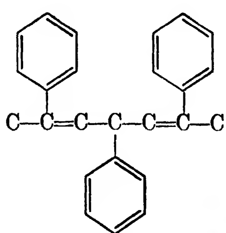
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,3-Triphenylpropyne-2 				
79[1]				

References on Three Phenyl Substitutions on Alkynes

1. Wieland, H., and H. Kloss, Ann. 470, 201 1929.

5. THREE PHENYL SUBSTITUTIONS ON ALKADIENES OR TWO PHENYLALKENYL SUBSTITUTIONS ON BENZENE, C_nH_{2n-26}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Triphenylpropadiene 				
210 [5,7]				
$C_{22}H_{18}$				
1,1,3-Triphenylbutadiene-1,2 				
102 [8]				
1,1,4-Triphenylbutadiene-1,3 				
101.5–102 [6]				
1,2,4-Triphenylbutadiene-1,3 				
103–104 [2]				

M. P.,°C	B. P.,°C @ 760mm	D_4^{20} p	n_D^{20}	Additional Data
1,4-Di-(1′-phenethenyl)-benzene				
138–139 [1]				
1,4-Di-(2′-phenethenyl)-benzene				
258 [4]				
$C_{25}H_{24}$				
2,4,6-Triphenylheptadiene-2,5				
145 [3]				

References on Three Phenyl Substitutions on Alkadienes or Two Phenylalkenyl Substitutions on Benzene

1. Bergmann, E., and A. Bondi, Ber. **64**, 1455 1931.
2. Bergmann, E., and T. Ukai, Ber. **66**, 54 1933.
3. Delacre, M., Bull. classe sci., Acad. roy. Belg. [3] **22**, 470 1891.
4. Kauffmann, H., Ber. **50**, 515 1917.
5. Meyer, K. H., and K. Schuster, Ber. **55**, 815 1922.
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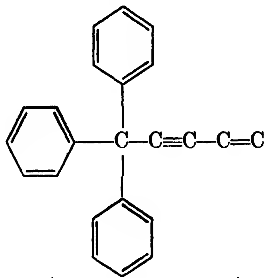
8. Ziegler, K., and W. Sauermilch, Ber. **63**, 1851 1930.

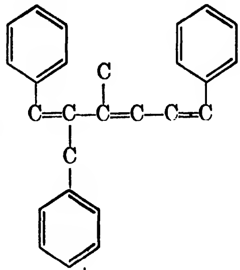
6. THREE PHENYL SUBSTITUTIONS ON ALKENYNES, C_nH_{2n-28}

M. P , °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1-Triphenylpenten-4-yne-2 				
134–135[1]				

References on Three Phenyl Substitutions on Alkenynes

1. Carothers, W. H., and G. J. Berchet, J. Am. Chem. Soc. 55, 1094 1933.

7. THREE PHENYL SUBSTITUTIONS ON ALKATRIENES, C_nH_{2n-28}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,6-Diphenyl-2-benzyl-3-methylhexatiene-1,3,5				
117[1]				

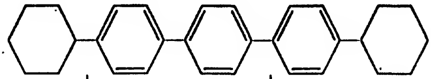
References on Three Phenyl Substitutions on Alkatrienes

1. Reimer, M., and G. P. Reynolds, Am. Chem. J. 48, 206 1913.

X. TERPHENYLS WITH ALICYCLIC SUBSTITUTIONS

1. Terphenyls with Two Cyclyl Substitutions C_nH_{2n-26}

1. TERPHENYLS WITH TWO CYCLYL SUBSTITUTIONS, C_nH_{2n-26}

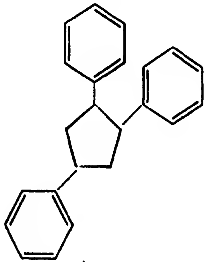
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4′,4″-Dicyclohexylterphenyl 				
	270 2.5[1]			

References on Terphenyl with Two Cyclyl Substitutions

1. Buu-Hoï and P. Cagniant, Compt. rend. **216**, 381 **1943**; C.A. **38**, 2334 **1944**.

XI. THREE PHENYL OR ONE PHENYL AND ONE BIPHENYLYL SUBSTITUTIONS ON ALICYCLICS

1,2,4-Triphenylcyclopentane



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	285 50[2,6]			

$C_{24}H_{24}$

Triphenylmethylcyclopentane (a)

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
121–122(b)[1]	260–262 28(b)[1]			

(a) The structure of this compound is not given.
(b) The melting and boiling points represent two different isomeric forms.

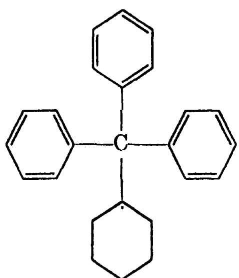
$C_{25}H_{26}$

Triphenyldimethylcyclopentane (a)

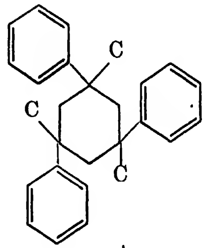
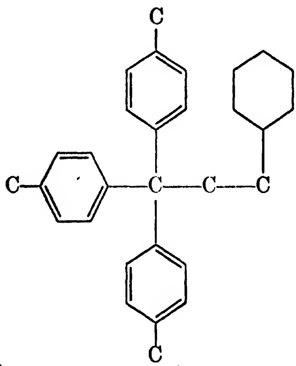
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
80–81(b)[1]	246–248 25(b)[1]			

(a) The structure of this compound is not given.
(b) The melting and boiling points represent two different isomeric forms.

Cyclohexyltriphenylmethane



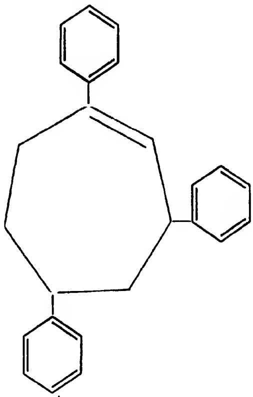
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
143–145[5]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5-Triphenyl-1,3,5-trimethylcyclohexane 				
	172–178 0.1[3]	1.0455[3]	1.58429[3]	
$C_{30}H_{36}$				
1,1,1-Tri-*p*-tolyl-3-cyclohexylpropane 				
126[4]				

References on Three Phenyl Substitutions on Cyclanes or Cyclylalkanes

1. Abell, R. D., J. Chem. Soc. 83, 367 1903.
2. Newmann, F. H., Ann. 302, 236 1898.
3. Staudinger, H., and F. Breusch, Ber 62, 442 1929.
4. Wieland, H., and K. Kloss, Ann. 470, 201 1929.
5. Wieland, H., and A. Meyer, Ann. 551, 249 1942; C.A. 37, 5048 1942.
6. Wislicenus, J., and F. H. Newmann, Ann. 302, 236 1898.

2. THREE PHENYL SUBSTITUTIONS ON CYCLENES, C_nH_{2n-26}

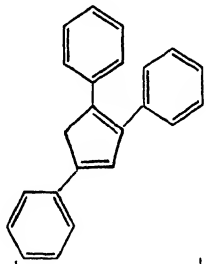
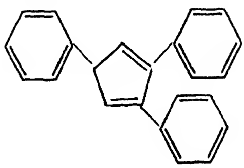
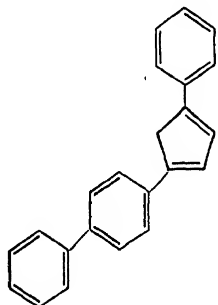
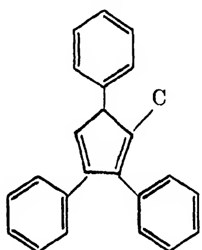
M. P. °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5-Triphenylcycloheptene-1 (Tetrahydromerodypnopinacolene) 				
145(a)[1] 115(a)[1]				

(a) These melting points represent two different forms of the compound.

References on Three Substitutions on Cyclenes

1. Delacre, M., Ann. chim [9] 2, 63 1914.

3. THREE PHENYL OR ONE PHENYL AND ONE BIPHENYLYL SUBSTITUTIONS ON CYCLODIENES, C_nH_{2n-28}

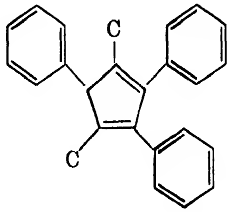
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4-Triphenylcyclopentadiene-1,3 				
149–150 [4] 149 [8]				
2,3,5-Triphenylcyclopentadiene-1,3 				
149 [9]				
1-Phenyl-4-*p*-biphenylylcyclopentadiene-1,3 				
217–218 [5]				
$C_{24}H_{20}$				
1,3,4-Triphenyl-2-methylcyclopentadiene-2,4 				
162–163 [1,2]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,4-Triphenylcyclohexadiene (a)				
111 [7]				

(a) The structure of this compound is not given.

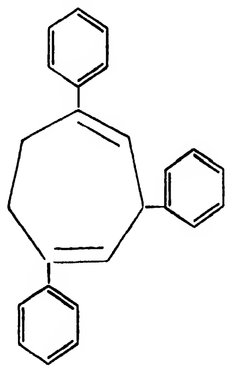
$C_{25}H_{22}$

1,4-Dimethyl-2,3,5-triphenylcyclopentadiene-1,3

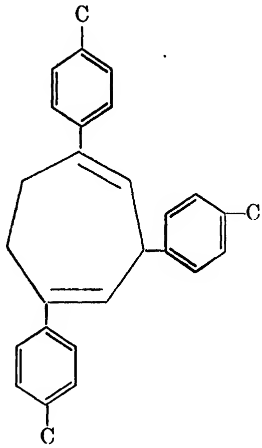


M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
127–128 [1]				

1,3,5-Triphenylcycloheptadiene-1,4
(Dihydromerodypnopinacolene)



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
135–136 [3] 94–95 [6]				

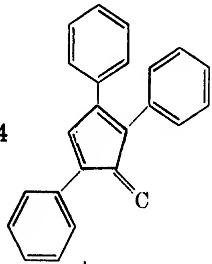
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5-Tri-*p*-tolylcycloheptadiene-1,4 (a) 				
122[6]				

(a) This structure is probable, although no structure was definitely assigned by the author.

References on Three Phenyl or One Phenyl and One Biphenylyl Substitutions on Cyclodienes

1. Abell, R. D., J. Chem. Soc. **83**, 367 1903.
2. Abell, R. D., Proc. Chem. Soc. **19**, 18 1903.
3. Delacre, M., Ann. chim. [9] **2**, 63 1914.
4. Dilthey, W., and W. Schommer, J. prakt. Chem. [2] **136**, 293 1933.
5. Drake, N. L., and J. R. Adams, J. Am. Chem. Soc. **61**, 1326 1939.
6. Gastaldi, C., Gazz. chim. ital. **51**, II, 289 1921.
7. Kohler, E. P., Am. Chem. J. **37**, 369 1907.
8. Newmann, F. H., Ann. **302**, 236 1898.
9. Wislicenus, J., and F. H. Newmann, Ann. **302**, 236 1898.

4. THREE PHENYL SUBSTITUTIONS ON ALKYLIDENECYCLODIENES, C_nH_{2n-30}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4-Triphenyl-3-methylenecyclopentadiene-1,4 				
148[1]				

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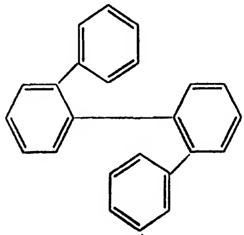
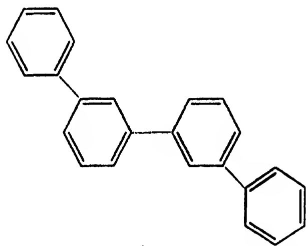
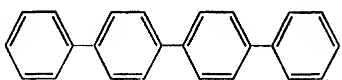
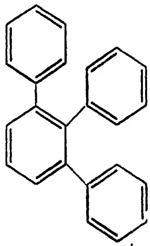
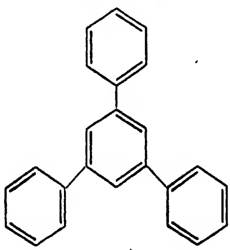
XII. QUATRAPHENYLS AND THEIR ALIPHATIC DERIVATIVES

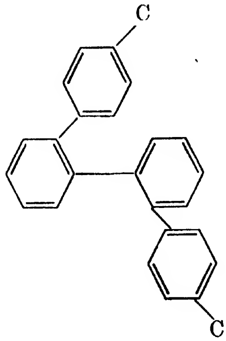
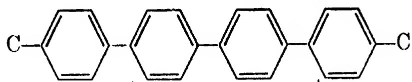
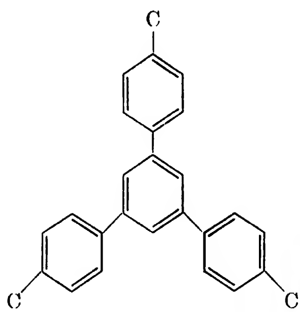
1. Quatraphenyls and Their Alkyl Derivatives C_nH_{2n-30}

1. QUATRAPHENYLS AND THEIR ALKYL DERIVATIVES, C_nH_{2n-30}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2′-Diphenylbiphenyl 				
118–119 [6,40] 117–119 [44] 118 [2,32]	420 [2] 193–195 1 [44]			
3,3′-Diphenylbiphenyl 				
86 [6]				
4,4′-Diphenylbiphenyl (Quaterphenyl) (Benzerythrene) 				
318 320 [3,6,7,13,15,29,53] 318–319 [46] 318 [25] 317 [14,19,34] 313–314 [26] 312 [17] 310 [33,38] 308 [30,34] 307–308 [43,47]	520 [34] 428 18 [34]			

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,3-Triphenylbenzene 				
157 [50]				
1,3,5-Triphenylbenzene 				
173.7				
174.3–174.5 [4,18]	459 717 [34]	1.199 30.3° [4]		
174.2–174.5 [18]		1.200 30.3° [4]		
173–174 [27]		1.200 (solid)(a) [4]		
172–173 [1]		1.201 (solid)(a) [4]		
172 [21,29,35,37,48]		1.205 (solid)(a) [49]		
171–172 [45]		1.206 (solid)(a) [19,49]		
171 [5,19,54]		1.205 0° [56]		
170–171 [36,52]				
170 [8,16,22,28,34]				
169.5–170 [31]				
169–170 [12,23,41,42,51]				
169 [20,55]				
168–169 [10]				
168 [11]				

(a) The temperature of these densities is not given.

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2′-Di-*p*-tolylbiphenyl 				
113–114 [44]				
4,4′-Di-*p*-tolylbiphenyl 				
334 [39]				
$C_{27}H_{24}$				
1,3,5-Tri-*p*-tolylbenzene 				
171 [9] 170 [5,11]				

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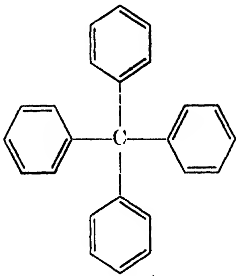
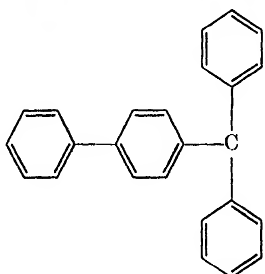
XIII. FOUR PHENYL, TWO PHENYL AND ONE BIPHENYLYL, OR TWO BIPHENYLYL SUBSTITUTIONS ON ALIPHATICS.

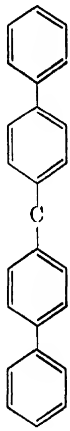
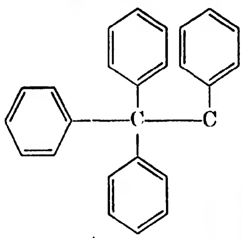
1. Four Phenyl, Two Phenyl and One Biphenylyl, or Two Biphenylyl Substitutions on Alkanes C_nH_{2n-30}
2. Four Phenyl, Two Phenyl and One Biphenylyl, or Two Biphenylyl Substitutions on Alkenes C_nH_{2n-32}
3. Four Phenyl or Two Biphenylyl Substitutions on Alkynes C_nH_{2n-34}
4. Four Phenyl or Two Biphenylyl Substitutions on Alkadienes C_nH_{2n-34}
5. Four Phenyl Substitutions on Alkatrienes C_nH_{2n-36}
6. Four Phenyl Substitutions on Alkadiynes C_nH_{2n-38}
7. Four Phenyl Substitutions on Alkatetraenes C_nH_{2n-38}
8. Four Phenyl Substitutions on Alkapentaenes C_nH_{2n-40}
9. Four Phenyl Substitutions on Alkahexaenes C_nH_{2n-42}

1. FOUR PHENYL, TWO PHENYL AND ONE BIPHENYLYL, OR TWO BIPHENYLYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-30}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetraphenylmethane				
282.5				
285 [22,26]	429 [7]			
283 [62]	429 735 [77]			
282 [77]				
281.5–282 [46]				
281–282 [82]				
281.5 [41]				
281 [7]				
280–281 [32]				
Diphenyl-*p*-biphenylylmethane				
112–113 [60]		1.161 0° [90]		

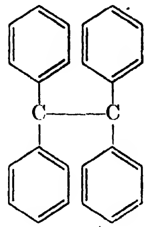




M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Di-*p*-biphenylylmethane				
161[1,2,43] 159[42] 158–159[83]	360[1]	1.178[43] 1.176 0°[90]		
$C_{26}H_{22}$				
1,1,1,2-Tetraphenylethane				
143				
144[28,61] 143–144[80] 142–143[27] 140–142[63] 140–141[38] 140[79]	277–280 21[27]			

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,1,2,2-Tetraphenylethane



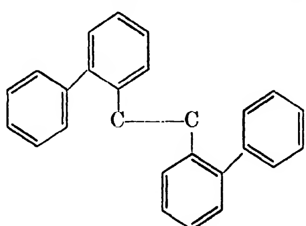
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
209.2				
211–212 [68]	379–383 [11,12,91]	1.170 0° [90]		
211–211.5 [6]	277–280 21 [91]	1.182 (solid)(c) [64]		
211 [44,53,54,55]	260 16 [44]			
209–211 [18]				
210 [35]				
209–210 [30,57]				
208–210 [37,51]				
209.5 [5]				
209(a)				
208–209(b)				
207–208.5 [16]				
208 [3,86]				
207–208 [4]				
206.5–208 [33]				
206–208 [4]				
207.5 [12]				
207 [8,23,75]				
205–207 [36]				
206 [17,23,29,76]				
205–206 [39,71,72,74]				

(a) The melting point 209 is found in references 10, 13, 14, 21, 31, 34, 40, 46, 47, 48, 49, 50, 52, 56, 58, 87, 88, 91.

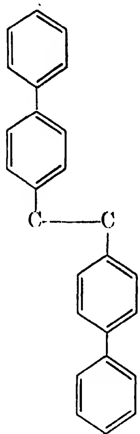
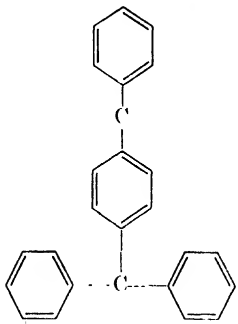
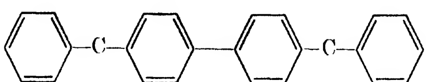
(b) The melting point 208-209 is found in references 15, 59, 65, 66, 69, 70, 73, 89.

(c) This density is the average of two determinations. The temperature for this density is not given.

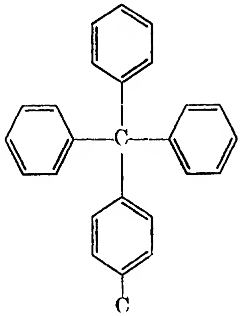
1,2-Di-*o*-biphenylylethane



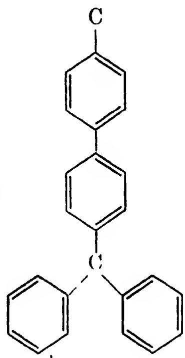
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	260 12 [78]			

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Di-*p*-biphenylylethane				
				
198–199 [84]				
Diphenyl-*p*-benzylphenylmethane				
				
78–78.5 [9]				
Methyldiphenylbenzylbenzene (a)				
125 [20]				
(a) The structure of this compound is not given.				
4,4′-Dibenzylbiphenyl				
				
114–115 [19] 113 [24,67,85]				

Triphenyl-*p*-tolylmethane



4-Methyl-4′-benzhydrylbiphenyl



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Triphenyl-*p*-tolylmethane				
163 [31]				
4-Methyl-4′-benzhydrylbiphenyl				
131 [28]				

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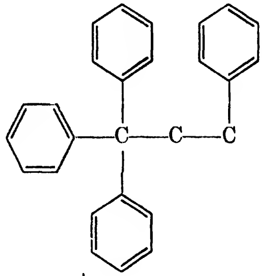
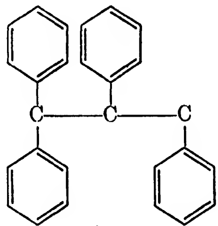
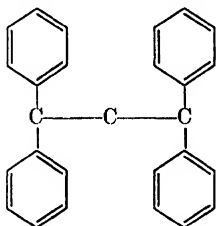
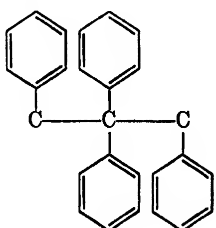
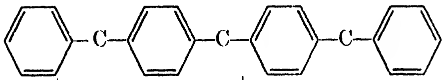
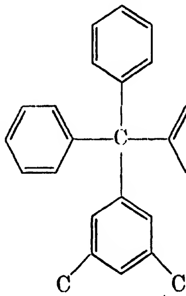
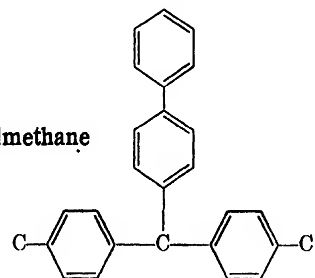
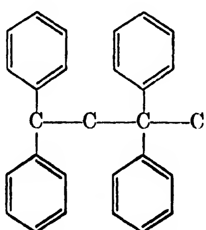
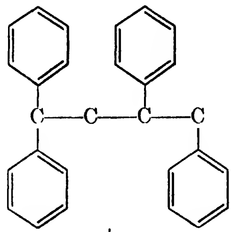
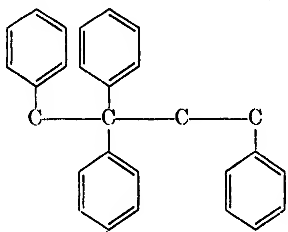
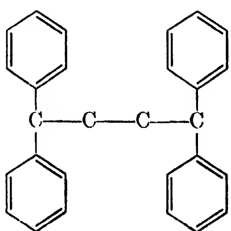
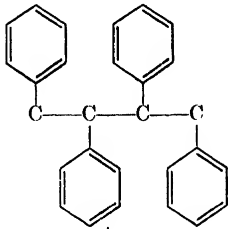
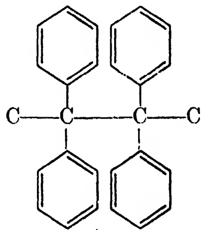
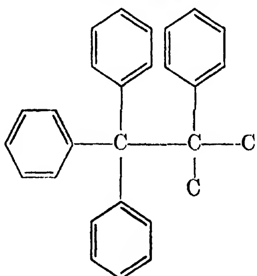
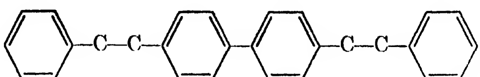
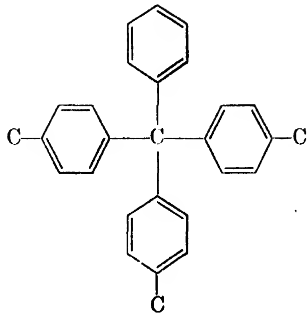
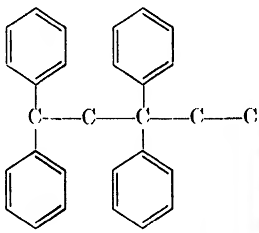
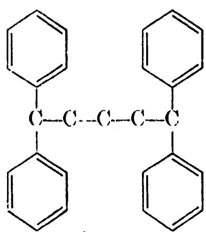
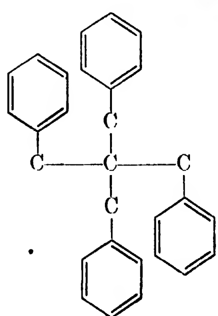
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1,3-Tetraphenylpropane				
126[35] 125–126[25]				
1,1,2,3-Tetraphenylpropane				
121[20] 87–89[8]				
1,1,3,3-Tetraphenylpropane				
139[34] 135–136[41]				
1,2,2,3-Tetraphenylpropane				
125–127[45]				

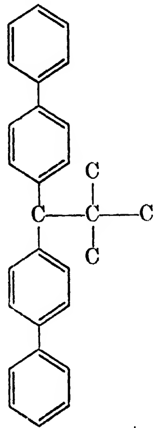
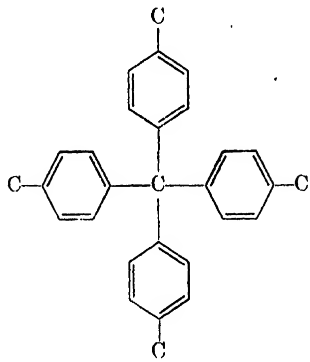
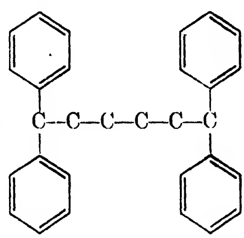
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
4,4′-Dibenzyldiphenylmethane 				
91.5[16]				
Triphenyl-3,5-dimethylphenylmethane 				
154[5]	450[5]			
Di-*p*-tolyl-*p*-biphenylylmethane 				
123–125[2]				
$C_{28}H_{26}$				
1,1,3,3-Tetraphenylbutane 				
122[7] 118[46]				

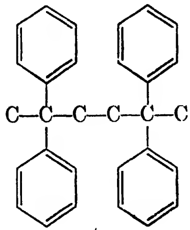
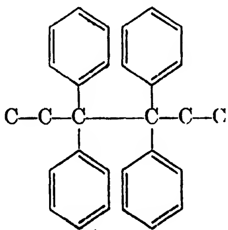
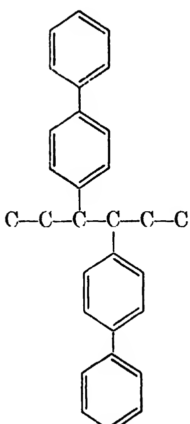
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,3,4-Tetraphenylbutane 				
	270–273 21[25]			
1,2,2,4-Tetraphenylbutane 				
172[25]				
1,1,4,4-Tetraphenylbutane 				
121 122[23] 121–122[24] 121(a) 120[48] 118–119.5[42]				

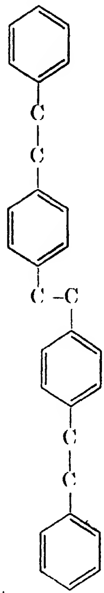
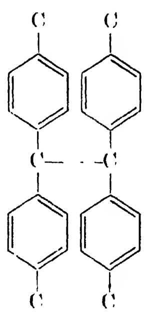
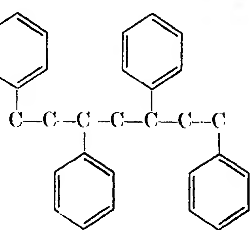
(a) The melting point 121 is found in references 9, 10, 21, 31, 32, 35, 47.

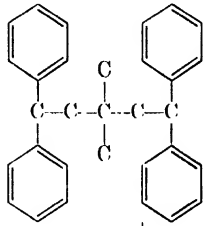
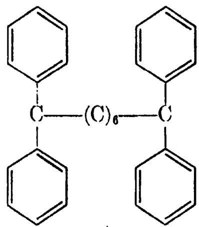
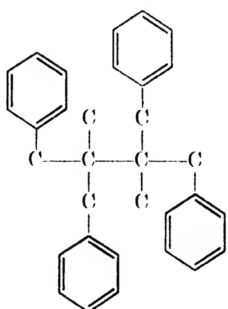
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,3,4-Tetraphenylbutane 				
255 [4,17] 254–255 [3] 251.5–252.0 [29]				
2,2,3,3-Tetraphenylbutane 				
126–127 [49]				
1,1,1,2-Tetraphenyl-2-methylpropane 				
	272 [37]			
4,4′-Diphenethylbiphenyl 				
146 [27]				

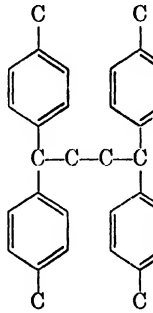
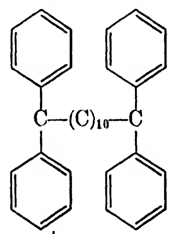
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Phenyltri-*p*-tolylmethane 				
177–178 [26]				
$C_{29}H_{28}$				
1,1,3,3-Tetraphenylpentane 				
128 [46]				
1,1,5,5-Tetraphenylpentane 				
80 [6] 79–80 [41]				
1,3-Diphenyl-2,2-dibenzylpropane 				
164 [18,30]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Di-*p*-biphenylyl-2,2-dimethylpropane 				
178–179[15]				
Tetra-*p*-tolylmethane 				
132[36]				
$C_{30}H_{30}$				
1,1,6,6-Tetraphenylhexane 				
125				
126–127[38]				
124.5–126[40]				
124–125.5[19]				
124–125[33]				
123–124[6]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2,5,5-Tetraphenylhexane 				
110[23]				
3,3,4,4-Tetraphenylhexane 				
85-86[49]				
3,4-Di-*p*-biphenylylhexane 				
254[13]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-(Di-4′-phenethylphenyl)-ethane				
97–98 [39]				
1,1,2,2-Tetra-*p*-tolylethane				
278–279 [1]				
$C_{31}H_{32}$				
1,3,5,7-Tetraphenylheptane				
	260–262 3 [28]	1.0452 25° [22]	1.5960 [22]	

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,5,5-Tetraphenyl-3,3-dimethylpentane 				
88–89 [41]				
$C_{32}H_{34}$				
1,1,8,8-Tetraphenyloctane 				
120–121.5 [43]				
Tetraphenyldipropylethane (a)				
70 (in N_2) [50]				
(a) The structure of this compound is not given.				
Tetraphenyldiisopropylethane (a)				
140–141 (in N_2) [50]				
(a) The structure of this compound is not given.				
1,4-Diphenyl-2,3-dimethyl-2,3-dibenzylbutane 				
171 [30]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,4,4-Tetra-*p*-tolylbutane 				
126[11,12]				
$C_{34}H_{38}$				
Tetraphenyldibutylethane (a)				
67–68 (in N_2)[50] 62–63[50]				
(a) The structure of this compound is not given.				
Tetraphenyldi-*tert*-butylethane (a)				
138–141 (in N_2)[14]				
(a) The structure of this compound is not given.				
$C_{36}H_{42}$				
1,1,12,12-Tetraphenyldodecane 				
74–75[44]				

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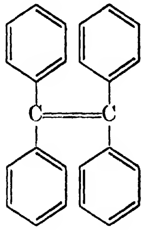
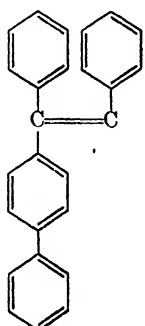
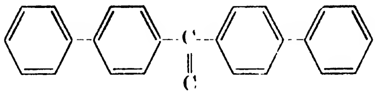
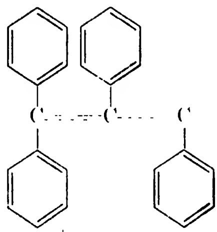
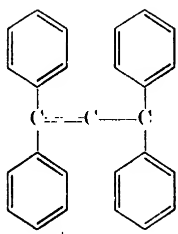
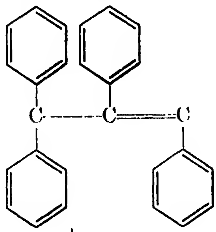
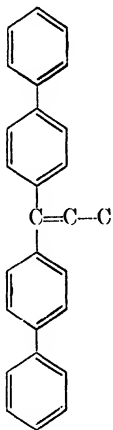
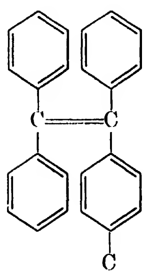
2. FOUR PHENYL, TWO PHENYL AND ONE BIPHENYLYL, OR TWO BIPHENYLYL SUBSTITUTIONS ON ALKENES, C_nH_{2n-32}

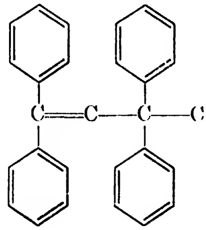
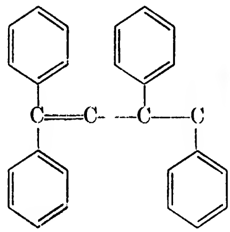
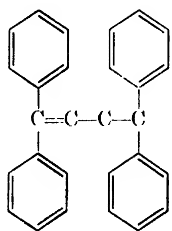
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetraphenylethene 				
222.4				
225[87]	425[19]	1.155 0°[83]		
224.6–224.9[63]				
223.5–224.5[9,28]				
224[43]				
223–224[34,58]				
222.8[50]				
222[4,6,54]				
221–222[75,78,80]				
220–222[48]				
221(a)				
220–221[5,41,49]				
219–221[10]				
220(b)				
219[20,51,57]				

(a) The melting point 221 is found in references 1, 2, 15, 16, 19, 21, 24, 26, 27, 38, 39, 40, 42, 44, 46, 47, 60, 64, 66, 69, 73, 77, 81.
(b) The melting point 220 is found in references 17, 18, 22, 53, 59, 65, 68.

1,2-Diphenyl-1-*p*-biphenylylethene 				
134–135[55]				

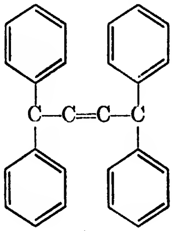
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Di-*p*-biphenylylethene 				
211[52,54]				
204–205.5[79]				
1,2-Di-*p*-biphenylylethene 				
198.5–200[62]				
$C_{27}H_{22}$				
1,1,2,3-Tetraphenylpropene-1 				
142[8]				
139[45]				
1,1,3,3-Tetraphenylpropene-1 				
127				
128–129[82]		1.135 0°[83]		
127–128[72,84]				
126–127[12]				
125–127[70]				
125[54]				
124[7]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2,3-Tetraphenylpropene-2 				
131[8]				
1,1-Di-*p*-biphenylylpropene-1 				
165–166[52]				
1,1,2-Triphenyl-2-*p*-tolylethene 				
153[68] 150–151[29]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,3,3-Tetraphenylbutene-1 				
113.5[35,36] 113[7] 112[25] 111[54]				
1,1,3,4-Tetraphenylbutene-1 				
63[56]	270–275 19[56] 260–265 14[56]			
1,1,2,3-Tetraphenylbutene (a)				
104–106[33]				
(a) The position of the double bond is not given.				
1,1,4,4-Tetraphenylbutene-1 				
97–98[76]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,1,4,4-Tetraphenylbutene-2



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
140–141(a)[11] 140.5(a)[54] 139–140[81] 132–133[79] 126.5–127.5(a)[11] 123–124(a)[54]				

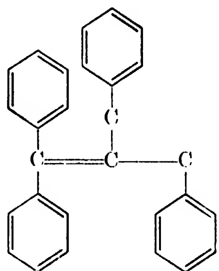
(a) These melting points represent two different isomers.

Distilbene (a)

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
163[14] 118–119[74]				

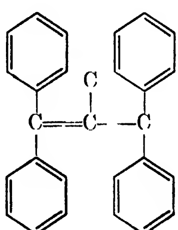
(a) The structure of this compound is not given.

1,1,3-Triphenyl-2-benzylpropene-1

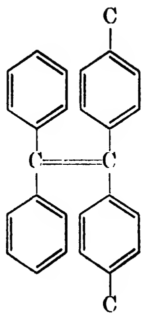


M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
78[54]				

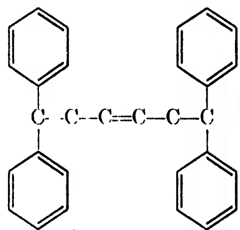
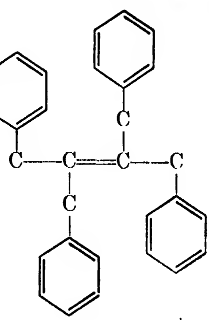
1,1,3,3-Tetraphenyl-2-methylpropene-1

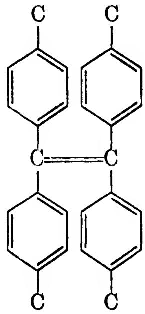


M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
132–133[83]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenyl-2,2-di-*p*-tolylethene 				
161 [6]				

$C_{30}H_{28}$

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,6,6-Tetraphenylhexene-3 				
79–80 [30]				
1,4-Diphenyl-2,3-dibenzylbutene-2 				
	304 [43]			

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetra-*p*-tolylethene 				
151 [23,67] 142 [3]				
Tetratolyethene (a)				
215 [61]				
(a) The structure of this compound is not given.				
$C_{32}H_{32}$ 1,1,4,4-Tetratolylbutene (a)				
151 [13]				
(a) The double bond is in either the 1 or the 2 position.				
$C_{34}H_{36}$ Tetradimethylphenylethene (a)				
244–245 [61]				
(a) The structure of this compound is not given.				

References on Four Phenyl, Two Phenyl and One Biphenylyl, or Two Biphenylyl Substitutions on Alkenes

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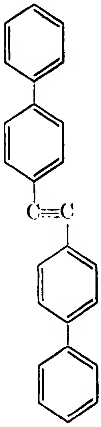
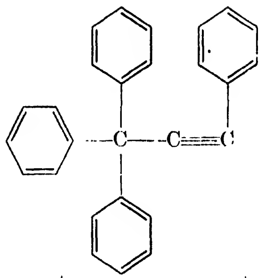
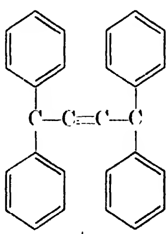
3. FOUR PHENYL OR TWO BIPHENYLYL SUBSTITUTIONS ON ALKYNES, C_nH_{2n-34}

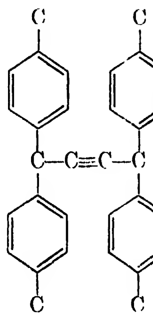
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Di-*p*-biphenylylethyne 				
243–244 [4]				
$C_{27}H_{20}$				
1,1,1,3-Tetraphenylpropyne-2 				
139 [5]				
$C_{28}H_{22}$				
1,1,4,4-Tetraphenylbutyne-2 				
116 [1] 114–115 [2] 114 [5]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Phenyltri-*p*-tolylpropyne (a)				
141[5]				

(a) The structure of this compound is not given.

$C_{32}H_{30}$

1,1,4,4-Tetra-*p*-tolylbutyne-2



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
123[3]				

References on Four Phenyl or Two Biphenylyl Substitutions on Alkynes

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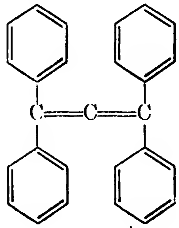
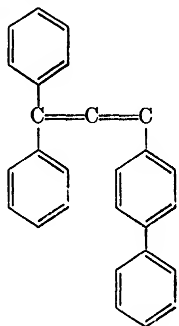
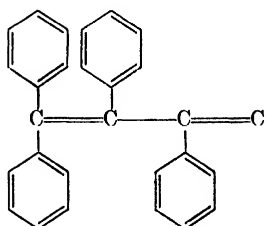
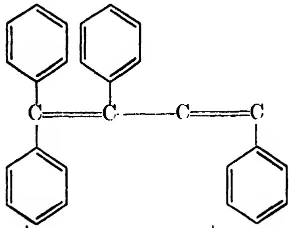
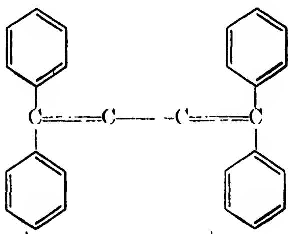
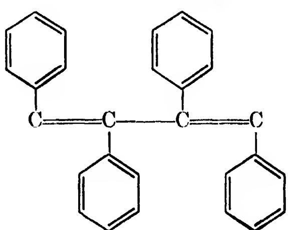
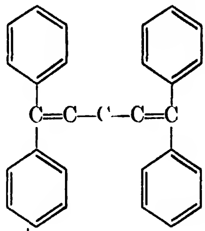
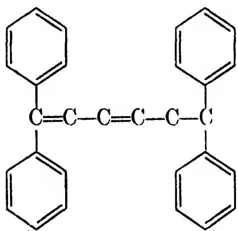
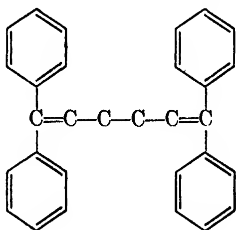
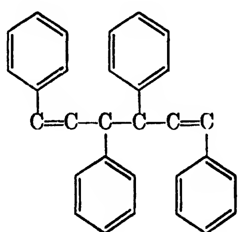
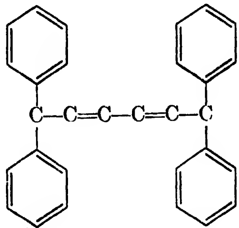
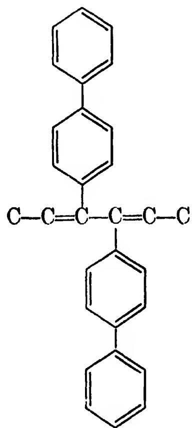
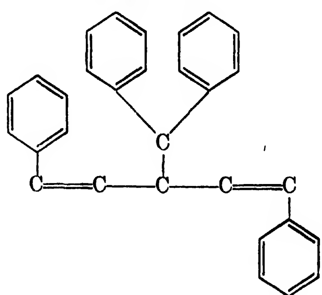
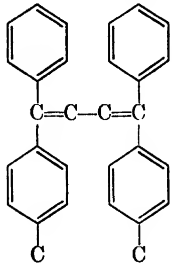
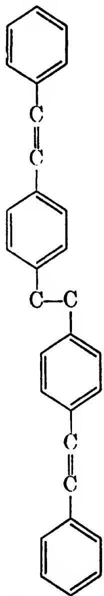
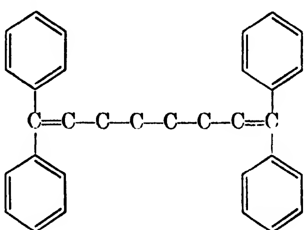
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetraphenylpropadiene 				
165 166 [25] 165 [27] 164–165 [7,22,30] 164 [23,40]				
1,1-Diphenyl-3-*p*-biphenylylpropadiene 				
139–140 [4]				
$C_{28}H_{22}$				
1,1,2,3-Tetraphenylbutadiene-1,3 				
118.5–120 [17]				

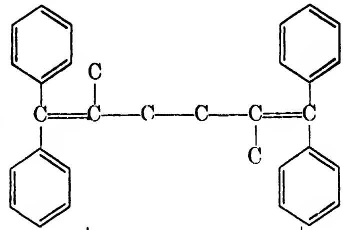
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2,4-Tetraphenylbutadiene-1,3 				
148–149 [5] 146–148 [26]				
1,1,4,4-Tetraphenylbutadiene-1,3 				
202.6 205–206 [19] 203–204 [20,34] 202 [1,8,9,28,29,31] 201–202 [18] 201 [38] 200–201 [6] 200 [21,32]				
1,2,3,4-Tetraphenylbutadiene-1,3 				
183–184 [21]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,5,5-Tetraphenylpentadiene-1,4				
76–77 [36]				
$C_{30}H_{26}$				
1,1,6,6,-Tetraphenylhexadiene-1,3				
196–197 [16]				
1,1,6,6-Tetraphenylhexadiene-1,5				
108–109 [3] 108 [8,24]				
1,3,4,6-Tetraphenylhexadiene-1,5				
137–138 [5]				

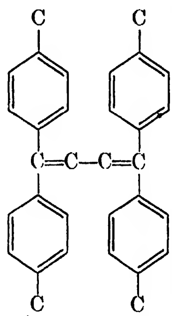
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,6,6-Tetraphenylhexadiene-2,4 				
148–149 [33]				
3,4-Di-*p*-biphenylylhexadiene-2,4 				
151 [12]				
1,5-Diphenyl-3-benzhydrylpentadiene-1,4 				
151–152 [33]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Diphenyl-1,4-di-*p*-tolylbutadiene-1,3 				
207-210[15]				
1,2-Di-*p*-phenethenylphenylethane 				
117-119[35]				
$C_{32}H_{30}$				
1,1,8,8-Tetraphenyloctadiene-1,7 				
92-93[3,13,14,39]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

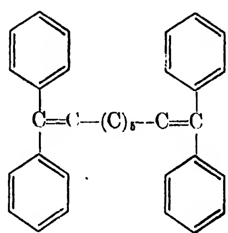
1,1,6,6-Tetraphenyl-2,5-dimethylhexadiene-1,5 

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
145–146 [37]				

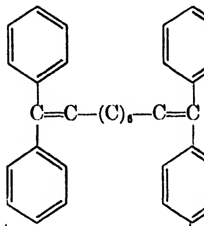
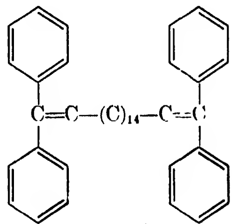
1,1,4,4-Tetra-*p*-tolylbutadiene-1,3 

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
255 [10,11]				

$C_{33}H_{32}$

1,1,9,9-Tetraphenylnonadiene-1,8 

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
	310 20 [13,14]	1.047 [14]		

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,10,10-Tetraphenyldecadiene-1,9 				
113[24] 107[13,14]				
$C_{42}H_{50}$				
1,1,18,18-Tetraphenyloctadecadiene-1,17 				
77[24]				

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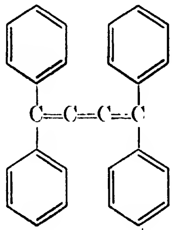
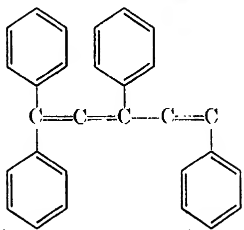
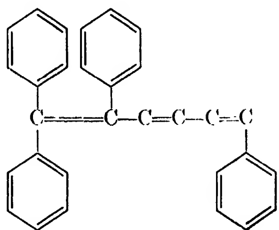
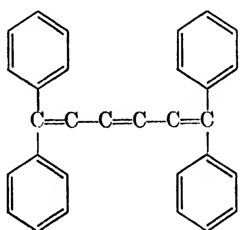
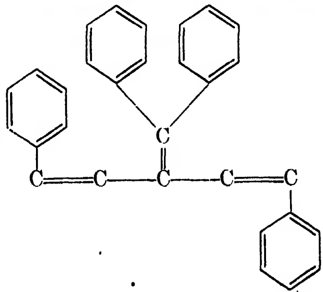
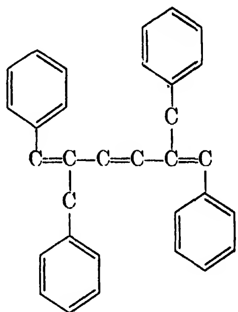
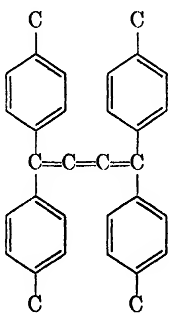
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetraphenylbutatriene 				
237 240 [1,2] 237 [9] 236.5–237 [8] 235 [16,17]				
$C_{29}H_{22}$				
1,1,3,5-Tetraphenylpentatriene-1,2,4 				
158 [6]				
$C_{30}H_{24}$				
1,1,2,6-Tetraphenylhexatriene-1,3,5 				
158–160 [12]				
1,1,6,6-Tetraphenylhexatriene-1,3,5 				
206–207 [9] 204–205 [10,15] 202–204 [14]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,6,6-Tetraphenylhexatriene (a)				
172–174 [5]				
(a) The position of the double bonds in not given.				
1,5-Diphenyl-3-benzhydrylidenepentadiene-1,4 				
173–174 [11]				
$C_{32}H_{28}$				
1,6-Diphenyl-2,5-dibenzylhexatriene-1,3,5 				
184 [13]				
Tetra-*p*-tolylbutatriene 				
242 [4] 240 [3,7]				

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1. Brand, K., Ber. **54,** 1987 1921.
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8. Kuhn, R., and K. Wallenfels, Ber. **71,** 783 1938.
9. Kuhn, R., and K. Wallenfels, Ber. **71,** 1889 1938.
10. Müller, E., and I. Dammerau, Ber. **70,** 2561 1937.
11. Staudinger, H., Ber. **41,** 1493 1908.
12. Staudinger, H., Ber. **42,** 4249 1909.
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15. Wittig, G., and H. Kröhne, Ann. **529,** 142 1937.
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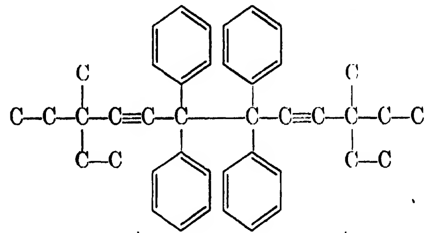
6. FOUR PHENYL SUBSTITUTIONS ON ALKADIYNES, C_nH_{2n-38}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2,11,11-Tetramethyl-6,6,7,7-tetraphenyldodecadiyne (a)				
116–118[2]				
(a) The triple bonds are in either the 3,9 or 4,8 positions.				

$C_{42}H_{46}$

3,10-Dimethyl-3,10-diethyl-6,6,7,7-tetraphenyldodecadiyne-4,8



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
140–142[1]				

References on Four Phenyl Substitutions on Alkadiynes

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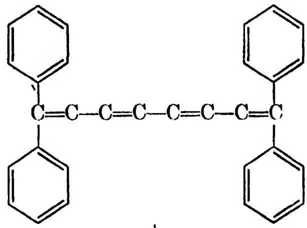
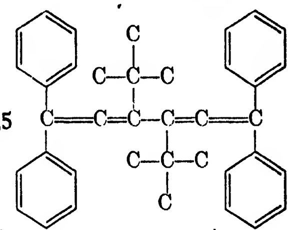
7. FOUR PHENYL SUBSTITUTIONS ON ALKATETRAENES, C_nH_{2n-38}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,8,8-Tetraphenyloctatetraene-1,3,5,7 				
200 [2,4] 198–199 [3]				
$C_{38}H_{38}$				
1,1,6,6-Tetraphenyl-3,4-di-*tert*-butylhexatetraene-1,2,4,5 				
152 [1]				

References on Four Phenyl Substitutions on Alkatetraenes

1. Farley, E. D., and C. S. Marvel, J. Am. Chem. Soc. **58, 29 1936.**
2. Müller, E., and I. Dammerau, Ber. **70, 2561 1937.**
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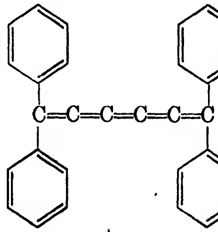
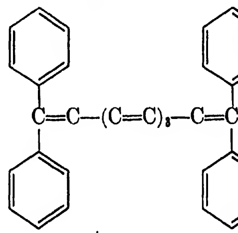
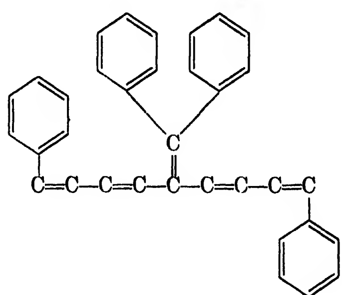
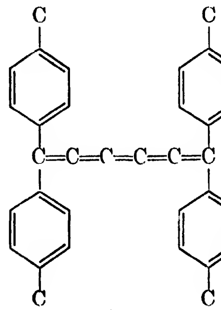
8. FOUR PHENYL SUBSTITUTIONS ON ALKAPENTAENES, C_nH_{2n-40}

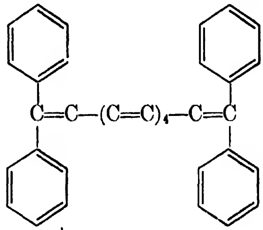
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetraphenylhexapentaene 				
302 [2]				
$C_{34}H_{28}$				
1,1,10,10-Tetraphenyldecapentaene-1,3,5,7,9 				
227–228 [6] 227 [3,7]				
1,9-Diphenyl-5-benzhydrylidenenonatetraene-1,3,6,8 				
150–151 [5] 149 [4]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,6,6-Tetra-*p*-tolylhexapentaene-1,2,3,4,5 				
326[1]				

References on Four Phenyl Substitutions on Alkapentaenes.

1. Kuhn, R., and G. Platzer, Ber. **13, 1410 1940.**
2. Kuhn, R., and K. Wallenfels, Ber. **71, 783 1938.**
3. Müller, E., and I. Dammerau, Ber. **70, 2561 1937.**
4. Schlenk, W., and E. Bergmann, Ann. **463, 1 1928.**
5. Staudinger, H., Ber. **41, 1493 1908.**
6. Wittig, G., and A. Klein, Ber. **69, 2087 1936.**
7. Wittig, G., and H Kröhne, Ann. **529, 142 1937.**

9. FOUR PHENYL SUBSTITUTIONS ON ALKAHEXAENES, C_nH_{2n-42}

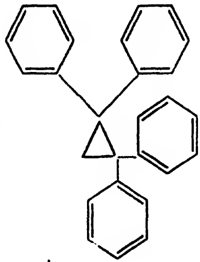
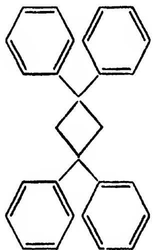
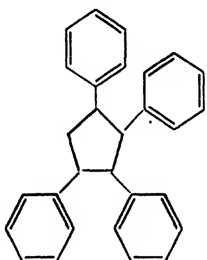
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,12,12-Tetraphenyldodecahexaene-1,3,5,7,9,11 				
213–214.5 [1,2]				

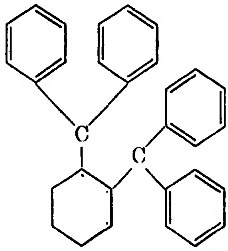
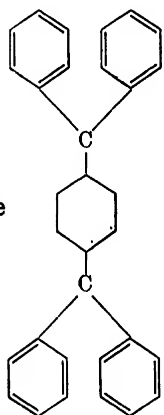
References on Four Phenyl Substitutions on Alkahexaenes

1. Wittig, G., and H. Kröhne, Ann. **529,** **142** **1937.**
2. Wittig, G., and R. Wietbrock, Ann. **529,** **162** **1937.**

XIV. FOUR PHENYL SUBSTITUTIONS ON ALICYCLICS

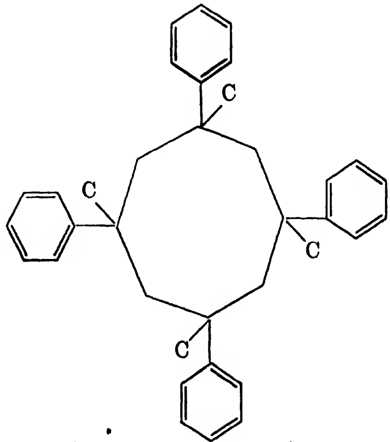
1. FOUR PHENYL SUBSTITUTIONS ON CYCLANES OR CYCLYLALKANES, C_nH_{2n-32}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2,2-Tetraphenylcyclopropane				
165.5 [8]				
$C_{28}H_{24}$				
1,1,3,3-Tetraphenylcyclobutane				
143.5 [7] 143 [4,5]				
$C_{29}H_{26}$				
1,2,3,4-Tetraphenylcyclopentane				
80.5–81 [2,3]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
cis-1,2-Dibenzhydrylcyclohexane 				
174–175[10]				
trans-1,2-Dibenzhydrylcyclohexane				
212–213[1] 210–212[10]				
cis-1,4-Dibenzhydrylcyclohexane 				
224–225[9]				
trans-1,4-Dibenzhydrylcyclohexane				
248–250[9]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,3,5,7-Tetramethyl-1,3,5,7-tetraphenylcyclo-octane



127–129[6]		1.0594 (amorphous)[6] 1.1452 (solid)[6]		

References on Four Phenyl Substitutions on Cyclanes or Cyclylalkanes

1. Bergmann, E., Ber. 63, 2593 1930.
2. Carpenter, H., Ann. 302, 223 1898.
3. Henderson, G. G., and R. H. Corstorphine, J. Chem. Soc. 79, 1256 1901.
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5. Lebedev, S. V., Y. Andreevskiĭ, and A. Matyushkina, Ber. 56, 2349 1923.
6. Staudinger, H.. and F. Breusch, Ber. 62, 442 1929.
7. Wieland, H., and E. Dorrer, Ber. 63, 404 1930.
8. Wittig, G., and B. Obermann, Ber. 67, 2053 1934.
9. Wittig, G., and H. Pook, Ber. 70, 2485 1937.
10. Wittig, G., and G. Waltnitzki, Ber. 67, 667 1934.

2. FOUR PHENYL AND TWO CYCLYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-34}

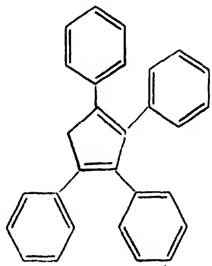
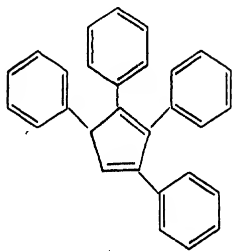
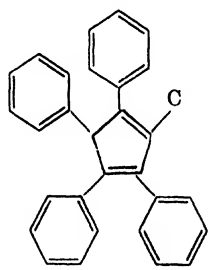
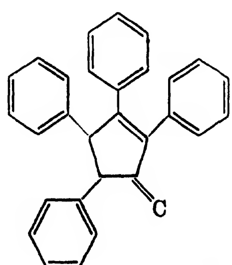
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetraphenyldicyclopentylethane (a)				
117–119 (in N_2)[1] 87–89[1]				

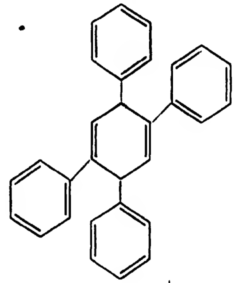
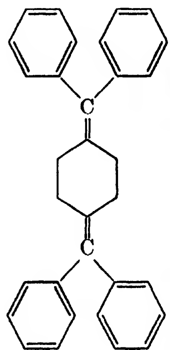
(a) The structure of this compound is not given.

References on Four Phenyl and Two Cyclyl Substitutions on Alkanes

1. Ziegler, K., A. Seib, F. Knövenagel, P. Herte, and F. Andreas, Ann. **551**, 150 1942; C.A. **37**, 5388 1943.

3. FOUR PHENYL SUBSTITUTIONS ON CYCLODIENES OR CYCLODIYLIDENES, C_nH_{2n-36}

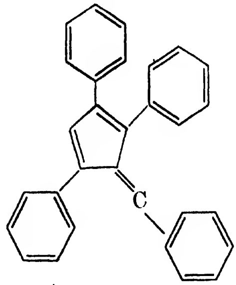
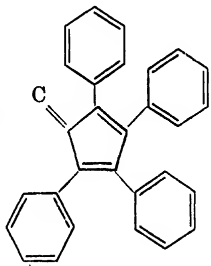
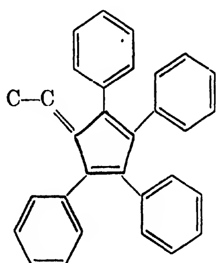
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,3,4-Tetraphenylcyclopentadiene-1,3				
178 [4] 177 [3]				
1,2,3,5-Tetraphenylcyclopentadiene-1,3				
177–178 [2]				
$C_{30}H_{24}$				
1,3,4,5-Tetraphenyl-2-methylcyclopentadiene-1,3 or 1,2,4,5-Tetraphenyl-3-methylenecyclopentene-1		 or 		
163 [1]				

M. P., °C	B. P., °C @ 760mm	D_4^{20} p	n_D^{20}	Additional Data
1,2,4,5-Tetraphenylcyclohexadiene-2,5 				
208–210[5]				
$C_{32}H_{28}$				
1,4-Dibenzhydrylidenecyclohexane 				
258–260[6]				

References on Four Phenyl Substitutions on Cyclodienes or Cyclodiylidenes

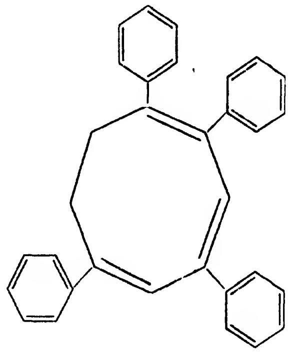
1. Allen, C. F. H , and J. A. Van Allan, J. Am. Chem. Soc. 65, 1384 1943.
2. Auerbach, E. B., Ber. 36, 933 1903.
3. Carpenter, H., Ann. 302, 223 1898.
4. Dilthey, W., W. Braun, and O. Trösken, J. prakt. Chem. [2] 139, 1 1933.
5. Schlenk, W., and E. Bergmann, Ann. 463, 1 1928.
6. Wittig, G., and H. Pook, Ber. 70, 2485 1937.

4. FOUR PHENYL SUBSTITUTIONS ON CYCLOTRIENES, CYCLODIENYLIDENES, OR DIALKENYLSPIRANES, C_nH_{2n-38}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4-Triphenyl-3-benzylidenecyclopentadiene-1,4				
156[4]				
1,2,3,4-Tetraphenyl-5-methylenecyclopentadiene-1,3				
211[4]				
$C_{31}H_{24}$				
1,2,3,4-Tetraphenyl-5-ethylidenecyclopentadiene-1,3				
194–195[4]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,2,4,6-Tetraphenylcyclooctatriene-1,3,5
(Dypnopinacolene-α)



95.5-96 [2] 95-96 [3]				

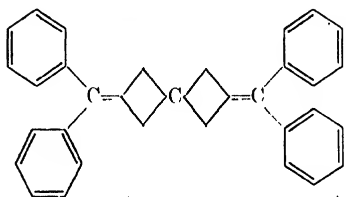
Dypnopinacolene-γ (a)

81-82 [3]				

(a) The structure of this compound is not given.

$C_{33}H_{28}$

2,6-Dibenzhydrylidenespiro-[3,3]-heptane

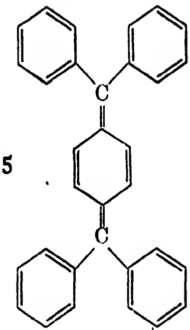
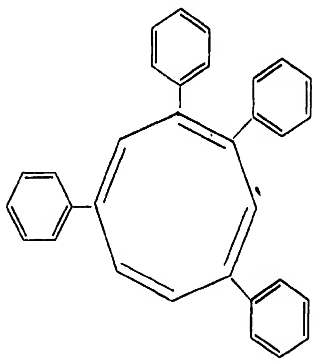


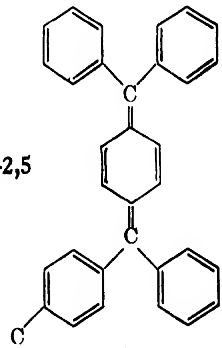
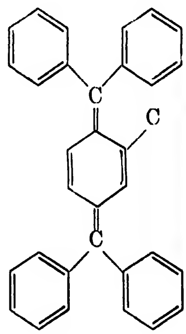
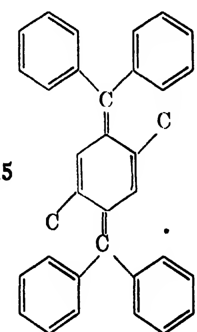
116-116.5 [1]				

References on Four Phenyl Substitutions on Cyclotrienes, Cyclodienylidenes or Dialkenylspiranes

1. Backer, H. J , and H. G. Kemper, Rec. trav. chim. 57, 1249 1938.
2. Delacre, M., Bull. classe sci. Acad. roy. Belg. [3] 22, 470 1891.
3. Delacre, M., Bull. classe sci. Acad. roy. Belg. [3] 27, 36 1894.
4. Dilthey, W., and P. Huchtemann, J. prakt. Chem. [2] 154, 238 1940.

5. FOUR PHENYL SUBSTITUTIONS ON CYCLOTETRAENES OR CYCLODIENYLDIYLIDENES, C_nH_{2n-40}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Dibenzhydrylidenecyclohexadiene-2,5 				
286 (in CO_2)[1] 239–242[6] 240[1] 238–240[5]				
1,2,4,7-Tetraphenyloctatetraene-1,3,5,7 				
200–200.5[2] 200[3]				
Isodypnopinacolene-α (a)				
175.5[7] (a) The structure of this compound is not given.				
Isodypnopinacolene-β (a)				
172[3] 171[7] (a) The structure of this compound is not given.				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1-Benzhydrylidene-4-(phenyl-*p*-tolylmethylene)-cyclohexadiene-2,5 				
197 (in CO_2)[1]				
1,4-Dibenzhydrylidene-2-methylcyclohexadiene-2,5 				
200–210[5]				
$C_{34}H_{28}$				
1,4-Dibenzhydrylidene-2,5-dimethylcyclohexadiene-2,5 				
200[4,5]				

References on Four Phenyl Substitutions on Cyclotetraenes or Cyclodienyldiylidenes

1. Chichibabin, A. E., Ber. **41,** 2770 **1908.**
2. Delacre, M., Bull. classe sci. Acad. roy. Belg. [3] **22,** 470 **1891.**
3. Delacre, M., Bull. classe sci. Acad. roy. Belg [3] **29,** 849 **1895.**
4. Staudinger, H., Ber. **41,** 1355 **1908.**
5. Staudinger, H., and S. Bereza, Ann. **380,** 243 **1911.**
6. Thiele, J., and H. Balhorn, Ber. **37,** 1463 **1904.**
7. Terlinck, E., Bull. classe sci. Acad. roy. Belg. **1904,** 1049

6. FOUR PHENYL SUBSTITUTIONS ON DICYCLENES, C_nH_{2n-40}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Tetrabenzyldicyclopentene (a)				
88[1]				

(a) The structure of this compound is not given.

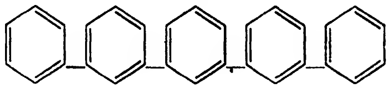
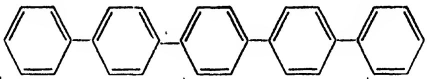
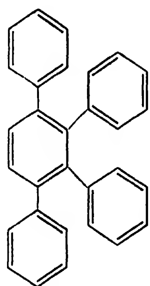
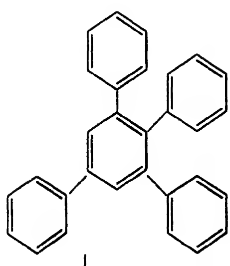
References on Four Phenyl Substitutions on Dicyclenes

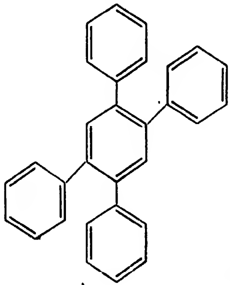
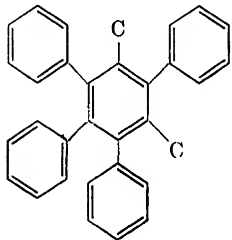
1. Alder, K., and H. Holzrichter, Ann. **524, 145 1936.**

XV. QUINQUAPHENYLS AND THEIR ALIPHATIC DERIVATIVES

1. Quinquaphenyls and Their Alkyl Derivatives C_nH_{2n-38}

1. QUINQUAPHENYLS AND THEIR ALKYL DERIVATIVES, C_nH_{2n-38}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
***m*-Quinquaphenyl** 				
112[1]				
***p*-Quinquaphenyl** 				
395[1] 388–389[6] 388.5[4,5]				
Pentaphenyl (a)				
445(b)[9] 401(c)[9]				
(a) The structure of this compound is not given. (b) The solid becomes a crystalline liquid at this temperature. (c) The solid becomes an amorphous liquid at this temperature.				
1,2,3,4-Tetraphenylbenzene 				
193–194[2] 190–191[3]				
1,2,3,5-Tetraphenylbenzene 				
277–278[10]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4,5-Tetraphenylbenzene 				Sublimation Temp., °C 264 [7]
269–270 [3]				
$C_{32}H_{26}$				
1,3-Dimethyl-2,4,5,6-tetraphenylbenzene 				
110–111 [8]				

References on Quinquaphenyls and Their Alkyl Derivatives

1. Busch, M., and W. Weber, J. prakt. Chem. [2] **146**, 1 **1936**.
2. Dilthey, W., and G. Hurtig, Ber. **67**, 495 **1934**.
3. Dilthey, W., and G. Hurtig, Ber. **67**, 2004 **1934**.
4. Gerngross, O., and M. Dunkel, Ber. **57**, 739 **1924**.
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6. Müller, E., and T. Töpel, Ber. **72**, 273 **1939**.
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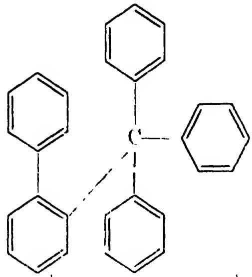
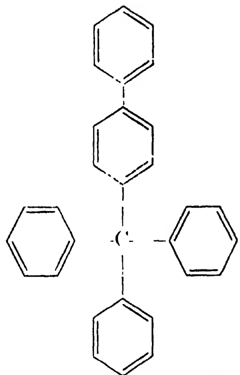
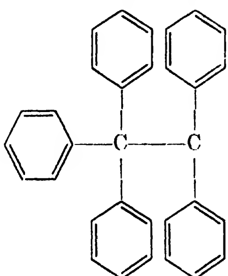
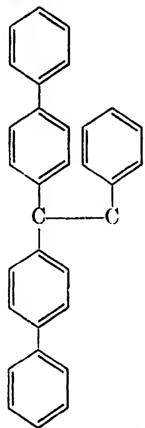
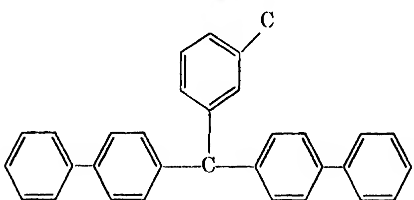
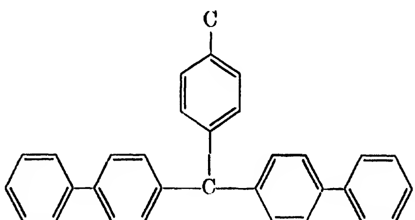
10. Wislicenus, J., and A. Lehmann, Ann. **302**, 195 **1898**.

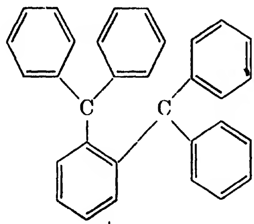
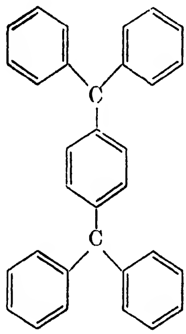
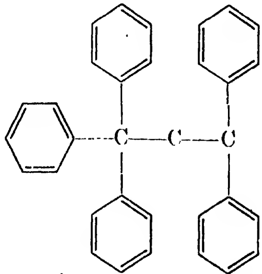
XVI. FIVE PHENYL, THREE PHENYL AND ONE BIPHENYLYL, OR ONE PHENYL AND TWO BIPHENYLYL SUBSTITUTIONS ON ALIPHATICS

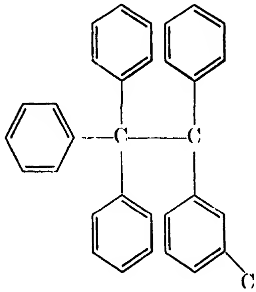
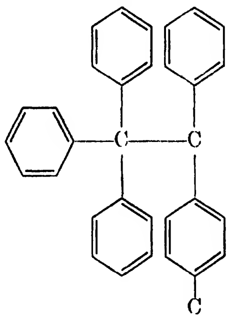
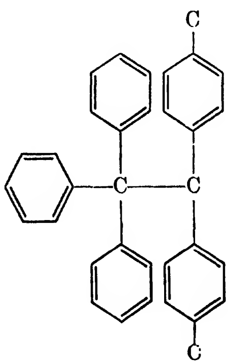
1. Five Phenyl, Three Phenyl and One Biphenylyl, or One Phenyl and Two Biphenylyl Substitutions on Alkanes C_nH_{2n-38}
2. Five Phenyl, Three Phenyl and One Biphenylyl, or One Phenyl and Two Biphenylyl Substitutions on Alkenes C_nH_{2n-40}
3. Five Phenyl Substitutions on Alkadienes C_nH_{2n-42}
4. Five Phenyl Substitutions on Alkatrienes C_nH_{2n-44}

1. FIVE PHENYL, THREE PHENYL AND ONE BIPHENYLYL, OR ONE PHENYL AND TWO BIPHENYLYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-38}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Triphenyl-*o*-biphenylylmethane 				
171 [14]				
Triphenyl-*p*-biphenylylmethane 				
197–198 [11]				
Phenyldibiphenylylmethane (a)				
161 [9]				
(a) The structure of this compound is not given.				
$C_{32}H_{26}$				
Pentaphenylethane 				
182–185 (in N_2) [1] 182–183 (in N_2) [4] 179 [7]		1.166 0° [18]		

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Pentaphenylethane (*Continued*)				
178–179[5] 178–179 (in CO_2)[6] 176[10] 166-178[1] 160–170[6]				
1,1-Di-*p*-biphenylyl-2-phenylethane 				
195–196[12]				
***m*-Tolyldi-*p*-biphenylylmethane** 				
144–145[3]				
***p*-Tolyldi-*p*-biphenylylmethane** 				
162–163[3]				

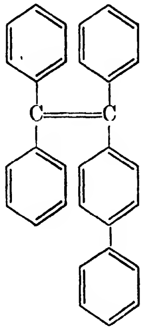
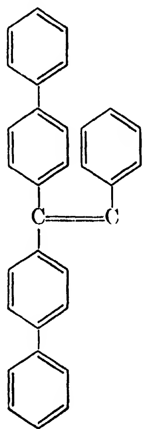
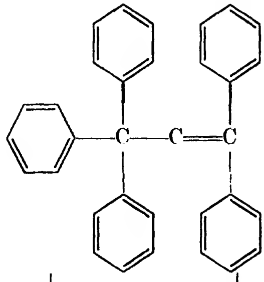
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Dibenzhydrylbenzene 				
146.5 [17]				
1,4-Dibenzhydrylbenzene 				
172 [13,16] 170–171 [15]				
$C_{33}H_{28}$				
1,1,1,3,3-Pentaphenylpropane 				
158–159 [8]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1,2-Tetraphenyl-2-*m*-tolylethane 				
157–159 (in N_2)[2] 149–157[2]				
1,1,1,2-Tetraphenyl-2-*p*-tolylethane 				
183–185 (in N_2)[1] 176–181[1]				
$C_{34}H_{30}$				
1,1,1-Triphenyl-2,2-di-*p*-tolylethane 				
170–180 (in N_2)[1] 163–172[1]				

References on Five Phenyl, Three Phenyl and One Biphenylyl, or One Phenyl and Two Biphenylyl Substitutions on Alkanes

1. Bachmann, W. E., J. Am. Chem. Soc. 55, 2135 1939.
2. Bachmann, W. E., R. Hoffman, and F. Whitehead. J. Org. Chem. 8, 320 1943.
3. Bachmann, W. E., and F. H. Moser, J. Am. Chem. Soc. 54, 1124 1932.
4. Bachmann, W. E., and F. Y. Wiselogle, J. Org. Chem. 1, 354 1936-1937.
5. Chichibabin, A. E., Ber. 40, 367 1907.
6. Chichibabin, A. E., J. Russ. Phys. Chem. Soc. 39, 160 1907; C.A. 1, 2105 1907.
7. Gilliland, W. L., and A. A. Blanchard, J. Am. Chem. Soc. 48, 410 1926.
8. Koelsch, C. F., and R. H. Rosenwald, J. Am. Chem. Soc. 59, 2170 1937.
9. Schlenk, W., A. Herzenstein, and T. Weickel, Ann. 372, 1 1910.
10. Schlenk, W., and H. Mark, Ber. 55, 2285 1922.
11. Schoepfle, C. S., and S. G. Trepp, J. Am. Chem. Soc. 54, 4059 1932.
12. Shilov, Y. A., J. Russ. Phys. Chem. Soc. 62, 95 1930; Chem. Zentr. 1930, II, 2524.
13. Ullmann, F., and C. Schläpfer, Ber. 37, 2001 1904.
14. Wieland, H., K. Heymann, T. Tsatsas, D. Juchum, G. Varvoglis, G. Labriola, O. Dobbelstein, and H. S. Boyd-Barrett, Ann. 514, 145 1934.
15. Wittig, G., and A. Klein, Ber. 69, 2087 1936.
16. Wittig, G., and H. Kröhne, Ann. 529, 142 1937.
17. Wittig, G., and M. Leo, Ber. 64, 2395 1931.
18. Ziegler, K., and F. Ditzel, Ann. 473, 194 1929.

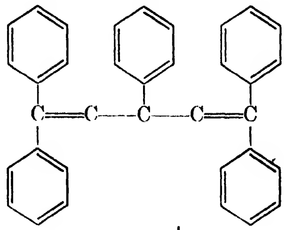
2. FIVE PHENYL, THREE PHENYL AND ONE BIPHENYLYL, OR ONE PHENYL AND TWO BIPHENYLYL SUBSTITUTIONS ON ALKENES, C_nH_{2n-40}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2-Triphenyl-2-*p*-biphenylylethene				
189–190 [2]				
1,1-Di-*p*-biphenylyl-2-phenylethene				
195–196 [4] 192–193 [3]				
$C_{33}H_{26}$				
1,1,1,3,3-Pentaphenylpropene-2				
132–133 [1]				

References on Five Phenyl, Three Phenyl and One Biphenylyl, or One Phenyl and Two Biphenylyl Substitutions on Alkenes

1. Koelsch, C. F., and R. H. Rosenwald, J. Am. Chem. Soc. **59,** 2170 **1937.**
2. Norris, J. F., R. Thomas, and B. M. Brown, Ber. **43,** 2940 **1910.**
3. Pfeiffer, P., and P. Schneider, J. prakt. Chem. [2] **129,** 129 **1931,**
4. Shilov, E. A., J. Russ. Phys. Chem. Soc. **62,** 95 **1930;** Chem. Zentr. **1930,** II, 2524.

3. FIVE PHENYL SUBSTITUTIONS ON ALKADIENES, C_nH_{2n-42}

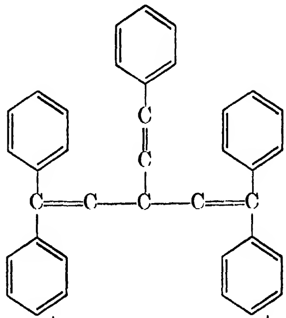
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,3,5,5-Pentaphenylpentadiene-1,4 				
168–169[1]				

References on Five Phenyl Substitutions on Alkadienes

1. Wittig, G., and H. Kosak, Ann. 529, 167 1937.

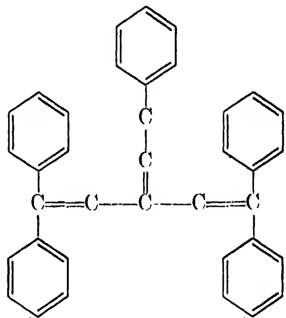
4. FIVE PHENYL SUBSTITUTIONS ON ALKATRIENES, C_nH_{2n-44}

1,1,5,5-Tetraphenyl-3-phenethenylpentadiene-1,4



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
141–142[1]				

1,1,5,5-Tetraphenyl-3-phenethylidenepentadiene-1,4



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
130–131[1]				

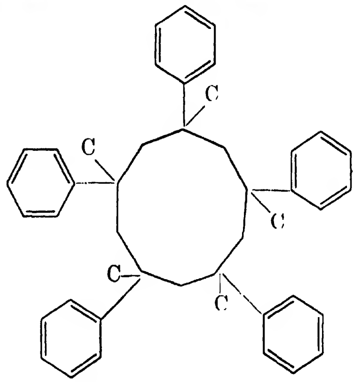
References on Five Phenyl Substitutions on Alkatrienes

1. Wittig, G., and H. Kosack, Ann. 529, 167 1937.

XVII. FIVE PHENYL SUBSTITUTIONS ON ALICYCLICS

1. FIVE PHENYL SUBSTITUTIONS ON CYCLANES, C_nH_{2n-40}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Pentaphenylcyclopentane (a)				
145[1,3]				
(a) The structure of this compound is not given.				
$C_{45}H_{50}$				
1,3,5,7,9-Pentaphenyl-1,3,5,7,9-pentamethylcyclodecane				
	240–244 0.1[2]	1.0624[2]	1.5960[2]	



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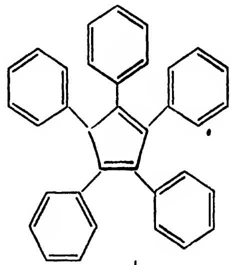
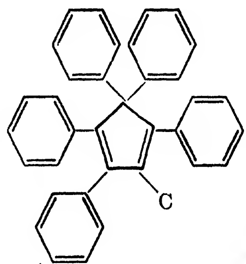
2. FIVE PHENYL SUBSTITUTIONS ON CYCLODIENES, C_nH_{2n-44}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,3,4,5-Pentaphenylcyclopentadiene-1,3 				
252–254[2] 250[1,4]		1.206 0°[3]		
$C_{36}H_{28}$ **1,1,2,4,5-Pentaphenyl-3-methylcyclopentadiene-2,4** 				
159[1]				

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2. Koelsch, C. F., and T. A. Geissman, J. Org. Chem. 3, 480 1938.
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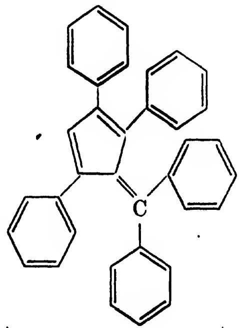
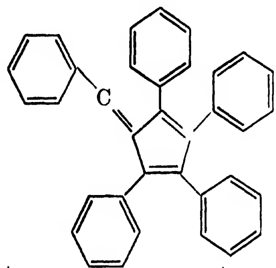
3. FIVE PHENYL SUBSTITUTIONS ON CYCLODIENYLIDENES, C_nH_{2n-46}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2,4-Triphenyl-3-benzhydrylidenecyclopentadiene-1,4				
181 [1]				
1,2,3,4-Tetraphenyl-5-benzylidenecyclopentadiene-1,3				
204 [2] 200-201 [1]				

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1. Dilthey, W., and P. Huchtemann, J. prakt. Chem. [2] 154, 238 1940.
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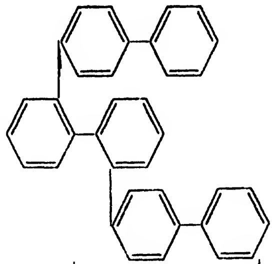
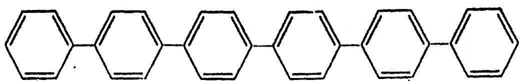
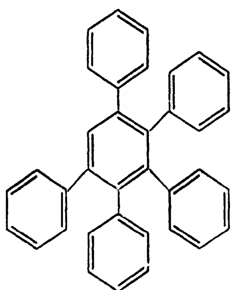
XVIII. SEXAPHENYLS AND THEIR ALIPHATIC DERIVATIVES

1. Sexaphenyls and Their Alkyl Derivatives C_nH_{2n-46}

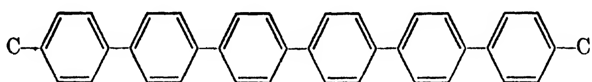
1. SEXAPHENYLS AND THEIR ALKYL DERIVATIVES, C_nH_{2n-46}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2′-Dibiphenylylbiphenyl (a) 				
185[1]				

(a) The name given to this compound by the author was 2,2″-Diphenylyldiphenyl, which is probably the above compound.

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
***p*-Sexaphenyl** 				
475[3,7,9] 465[8,10]				
Pentaphenylbenzene 				
252–253[5] 251[6] 246[2]				

$C_{38}H_{30}$

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
***p*-Ditolyl-*p*-quatraphenyl** 				
469 (in CO_2)[10] 162–163[4]				

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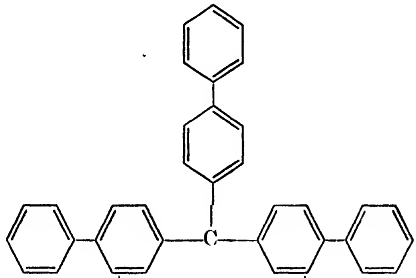
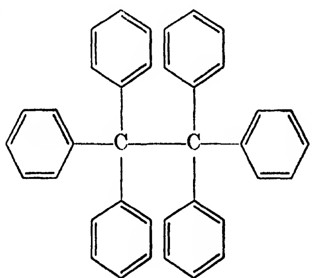
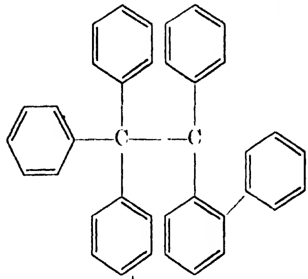
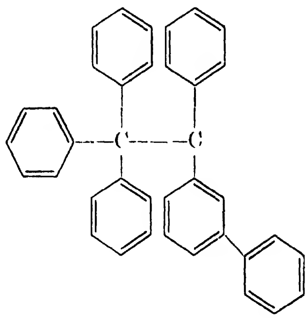
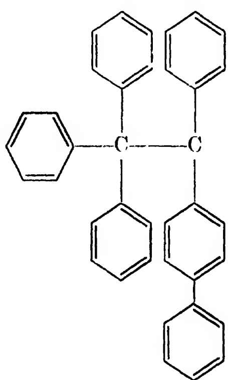
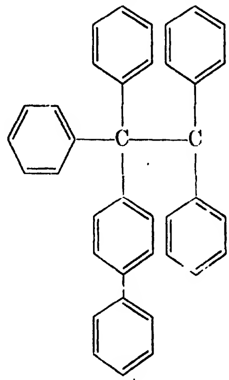
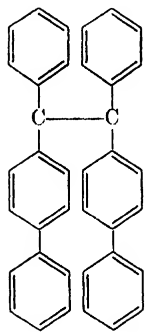
XIX. SIX PHENYL, FOUR PHENYL AND ONE BIPHENYLYL, TWO PHENYL AND TWO BIPHENYLYL, OR THREE BIPHENYLYL SUBSTITUTIONS ON ALIPHATICS

1. SIX PHENYL, FOUR PHENYL AND ONE BIPHENYLYL, TWO PHENYL AND TWO BIPHENYLYL, OR THREE BIPHENYLYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-46}

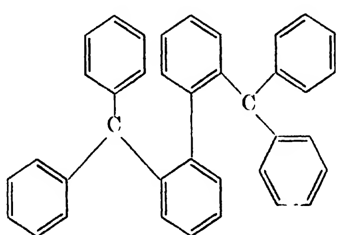
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_{20}^{20}	Additional Data
Tri-*p*-biphenylylmethane 				
237				
241-242 [23] 235-237 [16] 235-236 [25] 231 [29]				
$C_{38}H_{30}$				
Hexaphenylethane 				
227				
227-230 [6] 227 [24] 226-227 [14] 225 [1,15]		1.141 0°(a) [33] 1.168 0°(b) [33]		

(a) This density is an average of three determinations on the compound precipitated from acetone.
(b) This density is an average of three determinations on the compound precipitated from formic ester.

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1,2-Tetraphenyl-2-*o*-biphenylylethane 				
175–178 (in N_2) [3] 167–173 [3]				
1,1,1,2-Tetraphenyl-2-*m*-biphenylylethane 				
168–169 (in N_2) [3] 146–153 [3]				
1,1,1,2-Tetraphenyl-2-*p*-biphenylylethane 				
166–175 (in N_2) [2] 161–171 [2]				

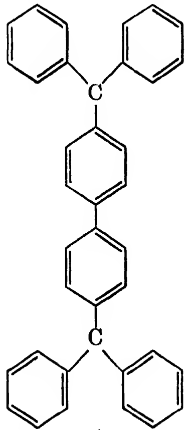
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2,2-Tetraphenyl-1-*p*-biphenylylethane 				
190–192 (in N_2) [4]				
1,2-Diphenyl-1,2-di-*p*-biphenylylethane 				
247 [18] 245–246 [5] 205–206(a) [18] 202–203(b) [5]				

(a) This melting point was determined on the *meso*-racemic isomer of the compound melting at 247.
(b) This melting point was determined on an isomer of the compound melting at 245-246.

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2′-Dibenzhydrylbiphenyl 				
238.5–239 [32] 236–237.5 [11]				

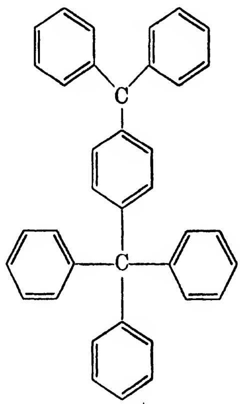
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

4,4′-Dibenzhydrylbiphenyl

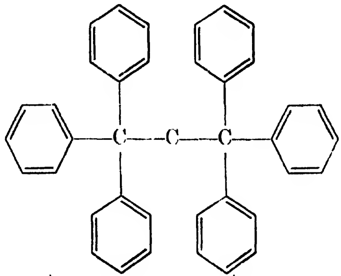
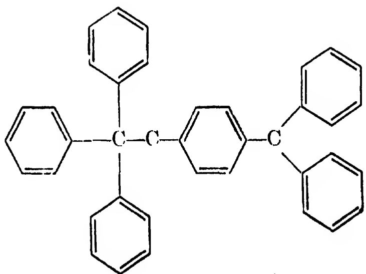
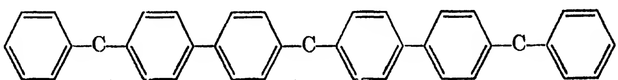
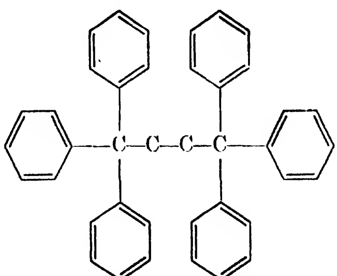


M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
162–163 [8]				

(4-Benzhydrylphenyl)-triphenylmethane

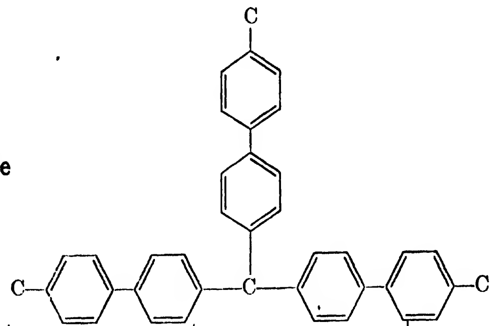


M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
229				
232 [22]				
231 [27]				
230 [13]				
228 [28]				
227 [9,10]				
226–227 [21]				
225 [31]				
223–224 [17]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1,3,3,3-Hexaphenylpropane 				
216[19]				
1,1,1-Triphenyl-2-(4′-benzhydrylphenyl)-ethane 				
177[80]				
Di-(4-benzyl-*p*-biphenylyl)-methane 				
179–180[7]				
$C_{40}H_{34}$				
1,1,1,4,4,4-Hexaphenylbutane 				
271[29]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

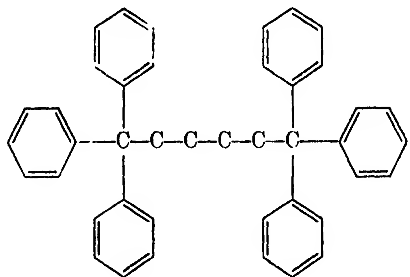
Tri-(4-methyl-*p*-biphenylyl)-methane



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
174.0–174.5[16]				

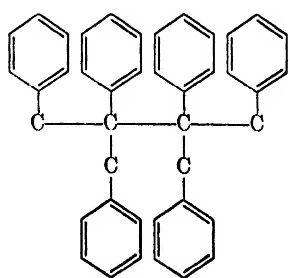
$C_{42}H_{38}$

1,1,1,6,6,6,-Hexaphenylhexane

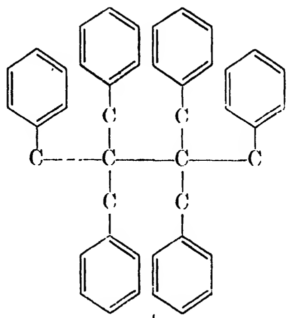


M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
189[12]				

1,2,3,4-Tetraphenyl-2,3-dibenzylbutane



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
126–127[24]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,4-Diphenyl-2,2,3,3-tetrabenzylbutane 				
82-83 [26] 80-81 [20]				

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25. Schmidlin, J., and A. Garcia-Banus, Ber. **45,** 3188 **1912.**
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30. Wieland, H., and H. Kloss, Ann. **470**, 201 1929.
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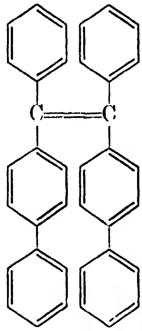
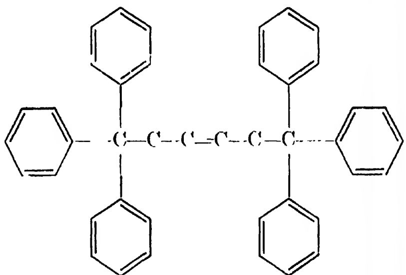
2. SIX PHENYL OR TWO PHENYL AND TWO BIPHENYLYL SUBSTITUTIONS ON ALKENES, C_nH_{2n-48}

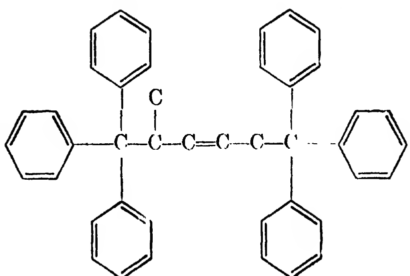
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,2-Diphenyl-1,2-di-*p*-biphenylylethene				
255[3] 218(a)[3]				

(a) This constant was determined on the *cis-trans* isomer.

$C_{42}H_{36}$

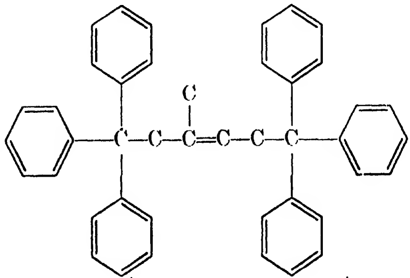
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1,6,6,6-Hexaphenylhexene-3				
224[1]				

$C_{43}H_{38}$

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1,6,6,6-Hexaphenyl-2-methylhexene-3				
174[1]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

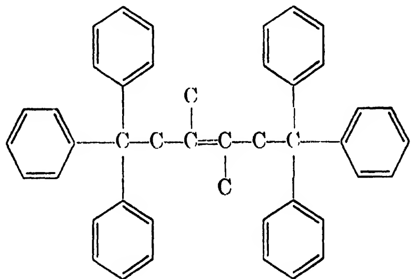
1,1,1,6,6,6-Hexaphenyl-3-methylhexene-3



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
166[3]				

$C_{44}H_{40}$

1,1,1,6,6,6-Hexaphenyl-3,4-dimethylhexene-3



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
240[3]				

References on Six Phenyl or Two Phenyl and Two Biphenylyl Substitutions on Alkenes

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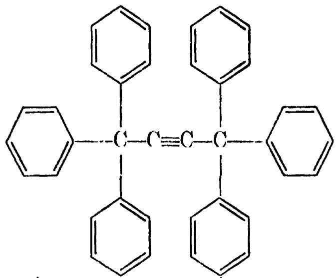
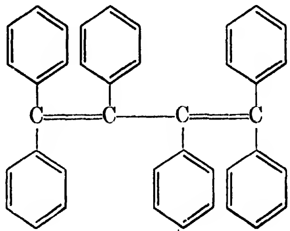
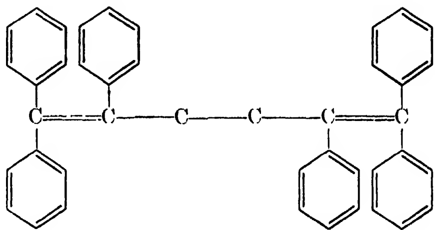
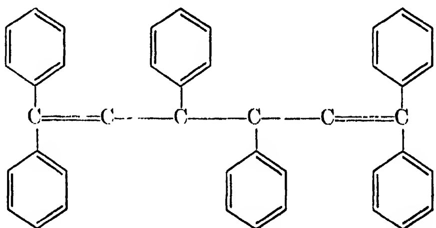
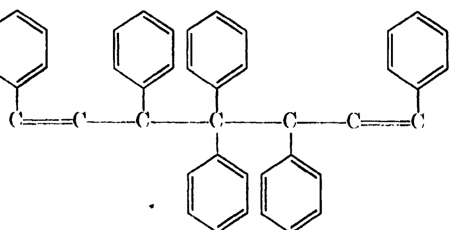
3. SIX PHENYL SUBSTITUTIONS ON ALKYNES, C_nH_{2n-50}

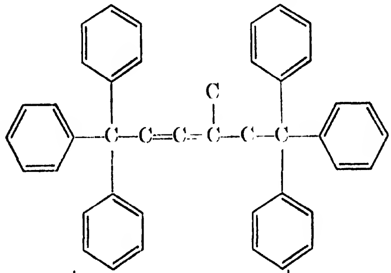
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1,4,4,4-Hexaphenylbutyne-2 				
260[1]				

References on Six Phenyl Substitutions on Alkynes

1. Wieland, H., and H. Kloss, Ann. **470, 201 1929.**

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2,3,4,4-Hexaphenylbutadiene-1,3 				
213–214 [4]				
$C_{42}H_{34}$				
1,1,2,5,6,6-Hexaphenylhexadiene-1,5 				
222 [2]				
1,1,3,4,6,6-Hexaphenylhexadiene-1,5 				
212–213 [3] 211–212 [7] 210–211 [5]				
$C_{43}H_{36}$				
1,3,4,4,5,7-Hexaphenylheptadiene-1,6 				
145 [1]				

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1,6,6,6-Hexaphenyl-4-methylhexadiene-2,3				
184–185.5[6]				

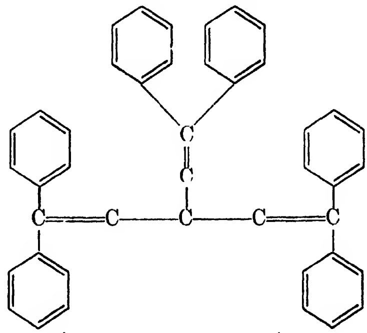


References on Six Phenyl Substitutions on Alkadienes

1. Bergmann, E., and T. Ukai, Ber. 66, 54 1933.
2. Bergmann, E., and H. Weiss, Ber. 64, 1485 1931.
3. Grabbe, Thesis, Marburg, 1924, quoted by Wittig and Kosack, Ann. 529, 184 1937.
4. Koelsch, C. F., J. Am Chem. Soc. 54, 3384 1932.
5. Marvel, C. S., M. B. Mueller, and W. Peppel, J. Am. Chem. Soc. 60, 410 1938.
6. Thompson, A. F., Jr., and D. M. Surgenor, J. Am. Chem. Soc. 65, 486 1943.
7. Wittig, G., and H. Kosak, Ann. 529, 167 1937.

5. SIX PHENYL SUBSTITUTIONS ON ALKATRIENES, C_nH_{2n-52}

1,1,5,5-Tetraphenyl-3-(di-2′,2′-phenylethenyl)-pentadiene-1,4

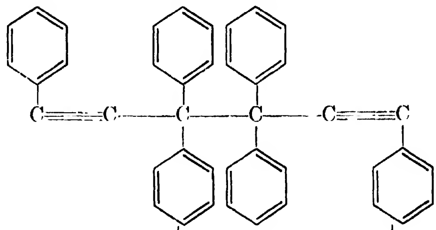


M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
223–224[1]				

References on Six Phenyl Substitutions on Alkatrienes

1. Wittig, G., and H. Kosack, Ann. 529, 167 1937.

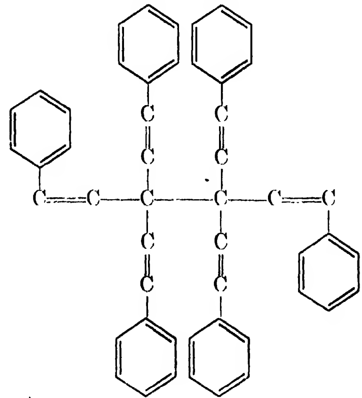
6. SIX PHENYL SUBSTITUTIONS ON ALKADIYNES, C_nH_{2n-54}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,3,4,4,6-Hexaphenylhexadiyne-1,5 				
179[1] 174–175[3] 169[2]				

References on Six Phenyl Substitutions on Alkadiynes

1. Dufraisse, C., and A. Willemart, Bull. soc. chim. [5] 1, 576 1934.
2. Munro, H. E., and C. S. Marvel, J. Am. Chem. Soc. 54, 4445 1932.
3. Wieland, H., and H. Kloss, Ann. 470, 201 1929.

7. SIX PHENYL SUBSTITUTIONS ON ALKAHEXAENES, C_nH_{2n-58}

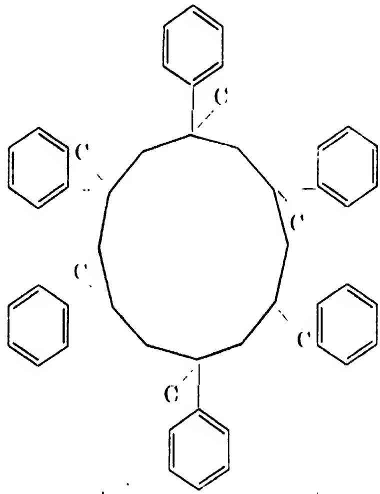
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,6-Diphenyl-3,3,4,4-tetraphenethenylhexadiene-1,5 				
173–174[1]				

References on Six Phenyl Substitutions on Alkahexaenes

1. Marvel, C. S., M. B. Mueller, and W. Peppel, J. Am. Chem. Soc. 60, 410 1938.

XX. SIX PHENYL SUBSTITUTIONS ON ALICYCLICS

1. SIX PHENYL SUBSTITUTIONS ON CYCLANES, C_nH_{2n-48}

	M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5,7,9,11-Hexaphenyl-1,3,5,7,9,11-hexamethylcyclododecane 		275–285 0.1[1]	1.0657[1]	1.6050[1]	

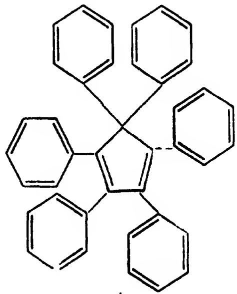
References on Six Phenyl Substitutions on Cyclanes

1. Staudinger, H., and F. Breusch, Ber. 62, 442 1929.

2. SIX PHENYL SUBSTITUTIONS ON CYCLODIENES, C_nH_{2n-52}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,1,2,3,4,5-Hexaphenylcyclopentadiene-2,4



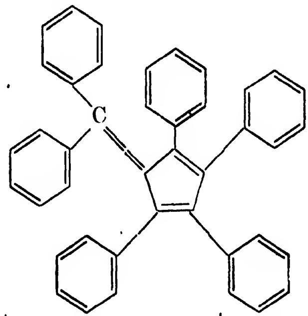
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
172[1]				

References on Six Phenyl Substitutions on Cyclodienes

1. Allen, C. F. H., and J. A. Van Allan, J. Am. Chem. Soc. **65,** 1384 **1943.**

3. SIX PHENYL SUBSTITUTIONS ON CYCLODIENYLIDENES, C_nH_{2n-54}

1,2,3,4-Tetraphenyl-5-benzhdrylidene-cyclopentadiene-1,3



M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
301-302[1]				

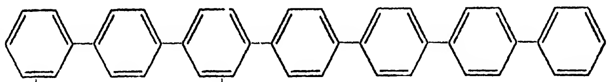
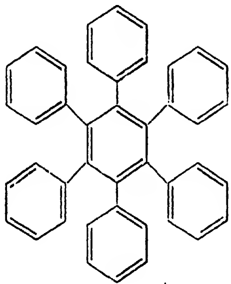
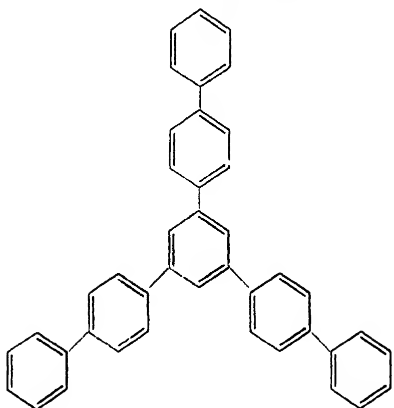
References on Six Phenyl Substitutions on Cyclodienylidenes

1. Dilthey, W., and P. Huchtemann, J. prakt. Chem. [2] **154, 238 1940.**

XXI. COMPOUNDS CONTAINING SEVEN PHENYL GROUPS

1. Septaphenyls C_nH_{2n-54}
2. Seven Phenyl or Three Phenyl and Two Biphenylyl Substitutions on Alkanes C_nH_{2n-54}
3. One Phenylalkynyl Substitution on Sexaphenyl C_nH_{2n-58}
4. Seven Phenyl Substitutions on Cyclanes C_nH_{2n-56}

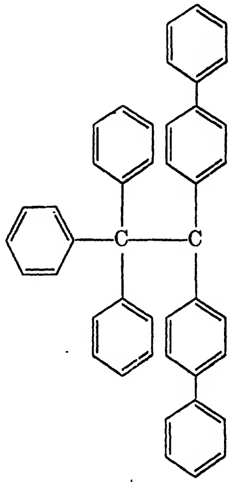
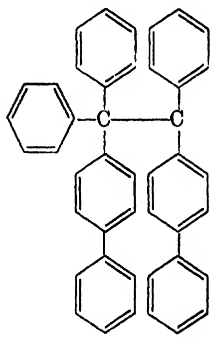
1. SEPTAPHENYLS, C_nH_{2n-54}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
p-Septaphenyl 				
545 [2]				
Hexaphenylbenzene 				
449–450 [4] 426 [5]				
1,3,5-Tri-*p*-biphenylylbenzene 				
232 [6] 230.5–231 [3] 230–231 [1]	400 12 [1]			

References on Septaphenyls

1. Bernhauer, K., P. Müller, and F. Neiser, J. prakt. Chem. [2] **145**, 301 1936.
2. Busch, M., and W. Weber, J. prakt. Chem. [2] **146**, 1 1936.
3. Clapp, D. B., and A. A. Morton, J. Am. Chem. Soc. **58**, 2172 1936.
4. Dilthey, W., and G. Hurtig, Ber. **67**, 495 1934.
5. Dilthey, W., and G. Hurtig, Ber. **67**, 2004 1934.
6. Skrowaczewska, Z., and E. Sucharda, Roczniki Chem. **16**, 151 1936; C.A. **31**, 2196 1937.

2. SEVEN PHENYL OR THREE PHENYL AND TWO BIPHENYLYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-54}

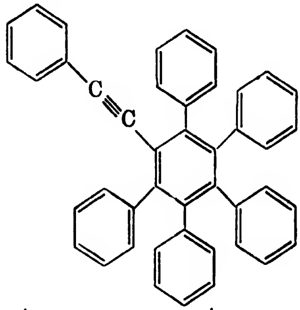
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,1-Triphenyl-2,2-di-*p*-biphenylylethane 				
180–190 (in N_2)[1] 171–180[1]				
1,1,2-Triphenyl-1,2-di-*p*-biphenylylethane 				
180–185 (in N_2)[2]				
$C_{50}H_{46}$ **Di-(tribenzylmethyl)-benzene** (a)				
72–73[3]				

(a) The structure of this compound is not given.

References on Seven Phenyl or Three Phenyl and Two Biphenylyl Substitutions on Alkanes

1. Bachmann, W. E., J. Am. Chem. Soc. **55,** 2135 **1939.**
2. Bachmann, W. E., and F. Y. Wiselogle, J. Org. Chem. **1,** 354 **1936-1937.**
3. Kothe, R., Ann. **248,** 56 **1888.**

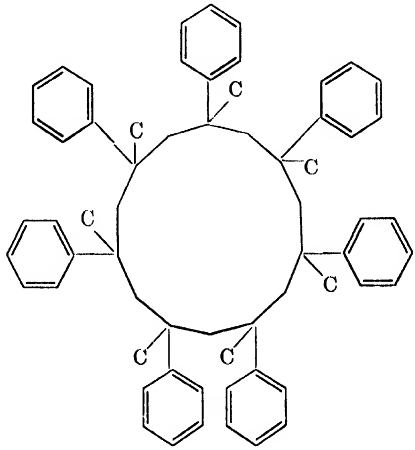
3. ONE PHENYLALKYNYL SUBSTITUTION ON SEXAPHENYL, C_nH_{2n-58}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
Pentaphenylphenethynylbenzene 				
258[1]				

References on One Phenylalkynyl Substitution on Sexaphenyl

1. Dilthey, W., W. Schommer, W. Höschen, and H. Dietrichs, Ber. 68, 1159 1935.

4. SEVEN PHENYL SUBSTITUTIONS ON CYCLANES, C_nH_{2n-56}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,3,5,7,9,11,13-Heptaphenyl-1,3,5,7,9,11,13-heptamethylcyclotetradecane 				
	312–316 0.1[1]	1.0671[1]	1.6010[1]	

References on Seven Phenyl Substitutions on Cyclanes

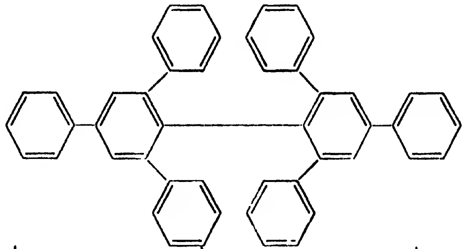
1. Staudinger, H., and F. Breusch, Ber. 62, 442 1929.

XXII. COMPOUNDS CONTAINING EIGHT PHENYL GROUPS AND ALIPHATIC GROUPS

1. Octaphenyl C_nH_{2n-62}
2. Eight Phenyl, Two Phenyl and Three Biphenylyl, or Four Biphenylyl Substitutions on Alkanes C_nH_{2n-62}
3. Four Biphenylyl Substitutions on Alkenes C_nH_{2n-64}
4. Eight Phenyl Substitutions on Alkadienes C_nH_{2n-66}

1. OCTAPHENYL, C_nH_{2n-62}

2,2′,4,4′,6,6′-Hexaphenylbiphenyl

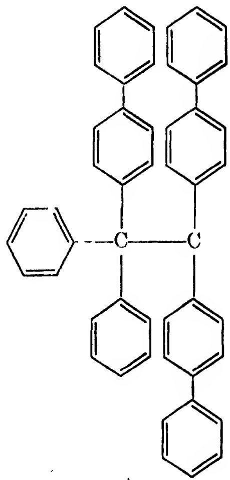
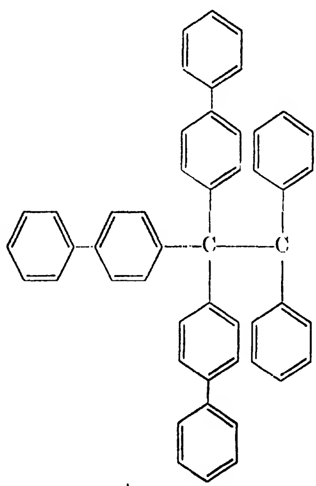


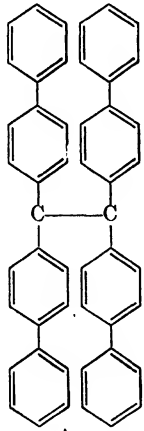
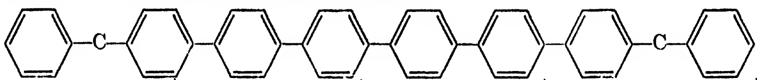
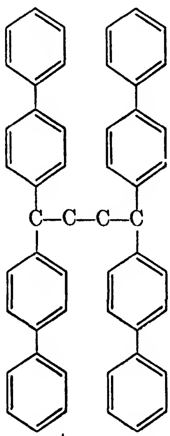
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
348[1]				

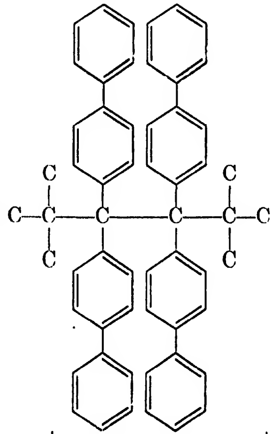
References on Octaphenyl

1. Kohler, E. P., and L. W. Blanchard, J. Am. Chem. Soc. **57, 367 1935.**

2. EIGHT PHENYL, TWO PHENYL AND THREE BIPHENYLYL, OR FOUR BIPHENYLYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-62}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1-Diphenyl-1,2,2-tri-*p*-biphenylylethane 				
227–230 (in N_2)[1]				
1,1,1-Tri-*p*-biphenylyl-2,2-diphenylethane 				
164–167 (in N_2)[1]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,2,2-Tetrabiphenylylethane 				
276–279[5,6]				
4,4'-Di-(4'''-benzyl-*p*-biphenylyl)-biphenyl 				
239–240[3]				
$C_{52}H_{42}$				
1,1,4,4-Tetrabiphenylylbutane 				
236[4] 234–235[7]				

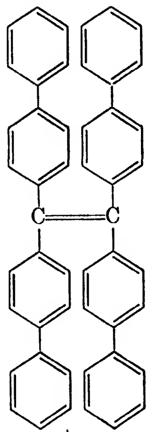
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
2,2,5,5-Tetramethyl-3,3,4,4-tetrabiphenylylhexane 				
136–137 [3]				

References on Eight Phenyl, Two Phenyl and Three Biphenylyl, or Four Biphenylyl Substitutions on Alkanes

1. Bachmann, W. E., and F. Y. Wiselogle, J. Org. Chem. 1, 354 1936-1937.
2. Busch, M., and W. Weber, J. prakt. Chem. [2] 146, 1 1936.
3. Conant, J. B., and R. F. Schultz, J. Am. Chem. Soc. 55, 2098 1933.
4. Schlenk, W., and E. Bergmann, Ann. 463, 1 1928.
5. Schlenk, W., J. Renning, and G. Racky, Ber. 44, 1178 1911.
6. Wittig, G., and H. Kosak, Ann. 529, 167 1937.
7. Wittig, G., and F. von Lupin, Ber. 61, 1627 1928.

3. FOUR BIPHENYLYL SUBSTITUTIONS ON ALKENES, C_nH_{2n-64}

1,1,2,2-Tetrabiphenylylethene



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
330[1]				

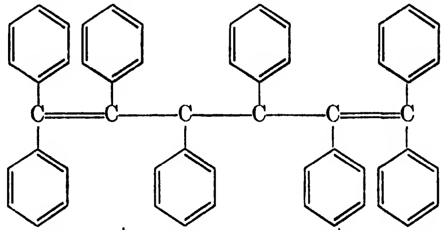
References on Four Biphenylyl Substitutions on Alkenes

1. Schlenk, W., J. Renning, and G. Racky, Ber. 44, 1178 1911.

4. EIGHT PHENYL SUBSTITUTIONS ON ALKADIENES, C_nH_{2n-66}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,1,2,3,4,5,6,6-Octaphenylhexadiene-1,5



255[1]				

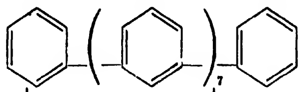
References on Eight Phenyl Substitutions on Alkadienes

1. Bergmann, E., and H. Weiss, Ber. **64,** 1485 1931.

XXIII. COMPOUNDS CONTAINING NINE PHENYL GROUPS

1. Nonaphenyl C_nH_{2n-70}
2. One Phenyl and Four Biphenylyl Substitutions on Alkanes C_nH_{2n-70}

1. NONAPHENYL, C_nH_{2n-70}

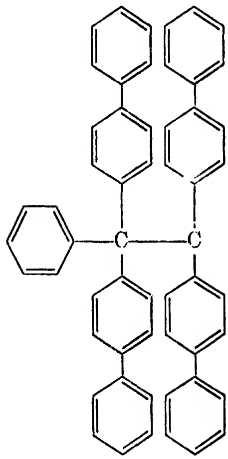
M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
***m*-Nonaphenyl** 				
166[1]				

References on Nonaphenyl

1. Busch, M., and W. Weber, J. prakt. Chem. [2] 146, 1 1936.

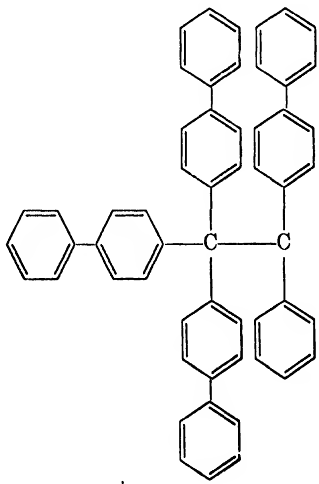
2. ONE PHENYL AND FOUR BIPHENYLYL SUBSTITUTIONS ON ALKANES, C_nH_{2n-70}

1-Phenyl-1,1,2,2-tetra-*p*-biphenylylethane



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
222–228 (in N_2)[1]				

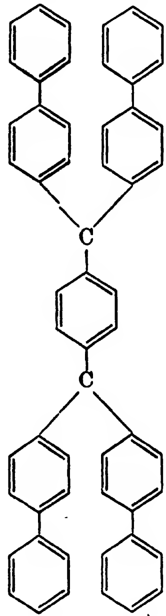
1,1,1,2-Tetra-*p*-biphenylyl-2-phenylethane



M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
223–226 (in N_2)[1]				

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,4-Di-(di-*p*-biphenylylmethyl)-benzene



338–341(a)[1]				

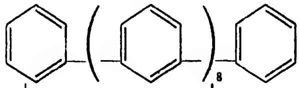
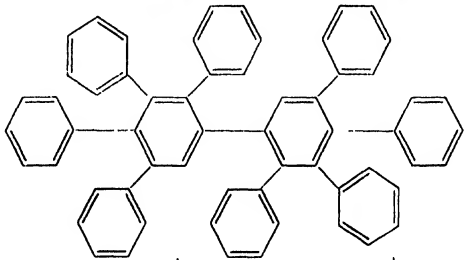
(a) This compound decomposes at the melting point.

References on One Phenyl and Four Biphenylyl Substitutions on Alkanes

1. Bachmann, W. E., and F. Y. Wiselogle, J. Org. Chem. 1, 354 1936-1937.
2. Wittig, G., and H. Kröhne, Ann. 529, 142 1937.

XXIV. COMPOUNDS CONTAINING TEN PHENYL GROUPS

1. DECAPHENYLS, C_nH_{2n-78}

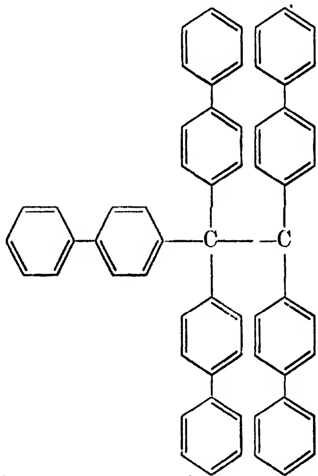
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
m-Decaphenyl 				
184[1]				
2,2′,3,3′,4,4′,5,5′-Octaphenylbiphenyl 				
318–319[2]				

References on Decaphenyls

1. Busch, M., and W. Weber, J. prakt. Chem. [2] 146, 1 1936.
2. Dilthey, W., W. Schommer, W. Höschen, and H. Dietrichs, Ber. 68, 1159 1935.

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data

1,1,1,2,2-Penta-*p*-biphenylylethane

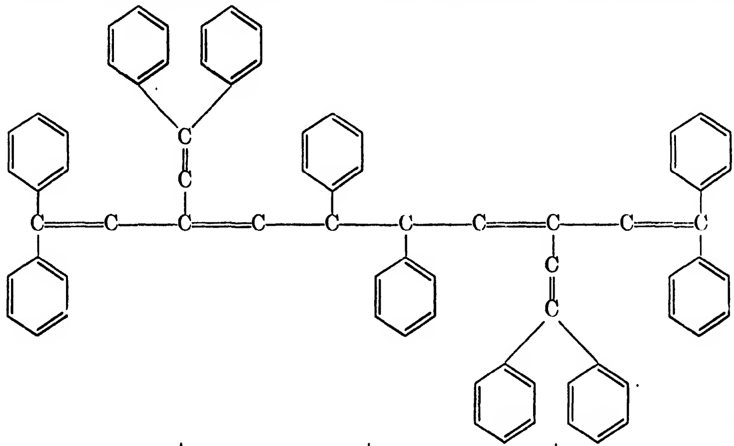


226–234 (in N_2)[1]				

References on Five Biphenylyl Substitutions on Alkanes

1. Bachmann, W. E., and F. Y. Wiselogle, J. Org. Chem. 1, 354 1936-1937.

3. TEN PHENYL SUBSTITUTIONS ON ALKAHEXANES, C_nH_{2n-90}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
1,1,5,6,10,10-Hexaphenyl-3,8-di-(2',2'-diphenylethenyl)-decatetraene-1,3,7,9				
				
180(a)[1]				
(a) Decomposition takes place at 180.				

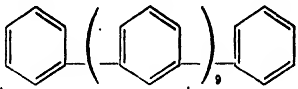
References on Ten Phenyl Substitutions on Alkahexaenes

1. Wittig, G., and H. Kosack, Ann. 529, 167 1937.

XXV. HIGHER PHENYL COMPOUNDS

1. Undecaphenyl C_nH_{2n-86}
2. Duodecaphenyl C_nH_{2n-94}
3. Tridecaphenyl C_nH_{2n-102}
4. Tetradecaphenyl C_nH_{2n-110}
5. Quinquedecaphenyl C_nH_{2n-118}
6. Sexadecaphenyl C_nH_{2n-126}

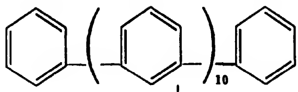
1. UNDECAPHENYL, C_nH_{2n-86}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
***m*-Undecaphenyl**				
202[1]				

References on Undecaphenyl

1. Busch, M., and W. Weber, J. prakt. Chem. [2] 146, 1 1936.

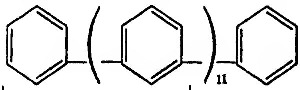
2. DUODECAPHENYL, C_nH_{2n-94}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
m-Duodecaphenyl 				
223[1]				

References on Duodecaphenyl

1. Busch, M., and W. Weber, J. prakt. Chem. [2] 146, 1 1936.

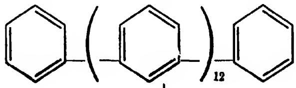
3. TRIDECAPHENYL, C_nH_{2n-102}

M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
m-Tridecaphenyl				
245[1]				

References on Tridecaphenyl

1. Busch. M., and W. Weber, J. prakt. Chem. [2] 146, 1, 1936.

4. TETRADECAPHENYL, C_nH_{2n-110}

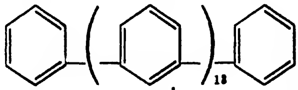
M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
m-Tetradecaphenyl 				
270–271[1]				

References on Tetradecaphenyl

1. Busch, M., and W. Weber, J. prakt. Chem. [2] 146, 1 1936.

5. QUINQUEDECAPHENYL, C_nH_{2n-118}

m-Quinquedecaphenyl

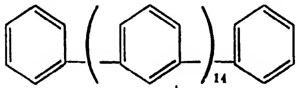


M. P., °C	B. P., °C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
292[1]				

References on Quinquedecaphenyl

1. Busch, M., and W. Weber, J. prakt. Chem. [2] 146, 1 1936.

6. SEXADECAPHENYL, C_nH_{2n-126}

M. P., °C	B. P.,°C @ 760mm	D_4^{20}	n_D^{20}	Additional Data
m-Sexadecaphenyl 				
321[1]				

References on Sexadecaphenyl

1. Busch, M., and W. Weber, J. prakt. Chem. [2] 146, 1 1936.

CHAPTER IX.

Loyalty to Government.

Royal Visit.—I was invited by the First Assistant to the Honourable the Resident on the occasion of the unveiling of Her Majesty the Queen's Statue at 4-30 P.M. on the 5th February 1906 during the Royal Visit.

The Jubilee in 1908.—The following letter No. G. 3375 Gnl. 163-08-21, dated 2nd October 1908 from the Secretary to the Government of Mysore, General and Revenue Departments to the Deputy Commissioner of Bangalore District, will bear testimony to the loyalty of my family to the British Government:—

"Chennapatna Mohammadans fed the poor in honour of the Day and offered prayers for His Majesty and His Highness' long life and prosperity and Mosque illuminated."—In forwarding the telegram dated 3rd November 1908 from Sowcar Mohammad Mustan Sahib of Chennapatna to the Honourable the Resident in Mysore, I am directed to request that you will be so good as to communicate to the Sowcar